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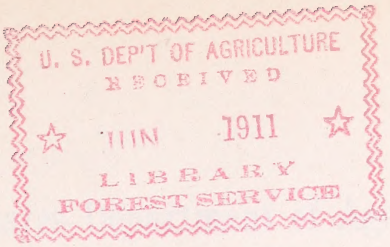

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L. O. HOWARD, Entomologist and Chief of Bureau.

AN ANNOTATED BIBLIOGRAPHY OF THE MEXICAN COTTON BOLL WEEVIL.

BY

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Agent and Expert.

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AN ANNOTATED BIBLIOGRAPHY OF THE MEXICAN COTTON BOLL WEEVIL.

(*Anthonomus grandis* Boh.)

By F. C. BISHOPP, *Agent and Expert.*

INTRODUCTION.[1]

The invasion of the United States by the cotton-boll weevil has caused revolutionary changes in the area in which cotton is produced. Not only have agricultural practices been changed, but the whole economic structure of the States concerned has been affected. Moreover, through trade relations the boll-weevil problem has attracted extensive attention outside of the United States. The literature that has naturally grown up on this subject is of interest to various persons. It interests entomologists on account of the detailed investigation of the insect and for other reasons; cotton planters, on account of their own experience in producing the staple; cotton merchants, on account of the manner in which the size and distribution of the crop has been affected; and historians and economists, on account of the manner in which institutions, such as the relation between tenant and landlord, have been affected.

The object of the present publication is to furnish an index to this literature for the use of the persons who have been mentioned and others. There is a present demand for such a publication, especially in the Eastern States of the cotton belt, and this demand will undoubtedly increase as time passes.

The literature on the boll weevil is probably as extensive as that on any other injurious insect. It is scattered through hundreds of publications, covers about 3,500 pages, and is in several languages. This paper includes all of the more important writings, comprising 297 titles. In order to include a considerable number which are of

[1] By W. D. Hunter, in charge southern field crop insect investigations.

special historical or economic interest it has been necessary to make references to a number of agricultural journals and similar periodicals. Such journals furnished the only source for a considerable class of information. Articles of minor or incidental importance have not been included. A certain number of visionary and controversial articles have also been excluded. It is believed, however, that references are made to all of the writings necessary to furnish such information regarding the various ramifications of the weevil problem as may be desired by most persons. In the laboratory of the Bureau of Entomology at Dallas, Tex., however, a complete manuscript bibliography, consisting of 515 titles, is to be found. Access to this manuscript will be given to such persons as may desire to make use of it.

BIBLIOGRAPHY OF THE COTTON-BOLL WEEVIL.

No. 1. ANDERSON, J. D., 1897.—After the boll weevil.<Texas Stockman and Farmer, vol. 17, No. 9, p. 4, December 8.

Results of a meeting of farmers in Cuero, Tex. As a preventive against boll weevil loss, the burning of the cotton stalks and trash in fields was recommended. Certain useless proceedings were also recommended, such as use of light traps and poisoning with various substances.

No. 2. ANON., 1897.—El picudo (*Anthonomus grandis* Boh.). Documentos referentes a su existencia en Mexico y a su invasion en los Estados Unidos del Norte. Mexico, Oficina Tip. de la Secretaria de Fomento, 100 pp., 5 figs.

Contains several letters from Mexican cotton planters setting forth ideas regarding the boll weevil and means of control. It also contains translations of two publications of the Division of Entomology, U. S. Department of Agriculture. (See Nos. 122 and 300.)

No. 3. ANON., 1897.—Junta de defensa "Contra el Picudo."<El Progreso de Mexico, ano 5, pp. 8–9, October 8.

Brief description of the weevil's history and means of control used in the United States. An appeal to the planters of the Laguna to prevent the introduction of the pest into that district.

No. 4. ANON., 1903.—Growing cotton despite the weevil.<Farm & Ranch, vol. 22, p. 5, February 7.

Urges the adoption of the recommendations of those who have studied the life history and habits of the weevil and the abandonment of the idea of extermination.

No. 5. ANON., 1903.—The boll weevil reward.<Texas Stockman & Farmer, vol. 22, No. 39, p. 2, August 12.

A copy of the act by which the sum of $50,000 was set apart as a reward for a practical remedy for the boll weevil.

No. 6. ANON., 1903.—Remedies suggested for exterminating the boll weevil.<Texas Stockman & Farmer, vol. 22, No. 40, p. 6, August 19.

A number of remedies for the boll weevil suggested in response to the offering of a reward by the State of Texas.

No. 7. ANON., 1903.—The boll weevil here to stay.<Farm & Ranch, vol. 22, p. 8, September 5.

Mention of the fact that the weevil was found in portions of Texas from which the weevil had migrated and other statements quoted from Mr. W. D. Hunter regarding the permanence of the pest.

No. 8. ANON., 1903.—Machines for the destruction of the boll weevil.<Farm & Ranch, vol. 22, 4 figs., p. 1, November 7.

Remarks on various devices designed for use against the boll weevil.

No. 9. ANON., 1903.—El parasito del picudo.<El Progreso de Mexico, ano 10, p. 284, 1 fig.

Note regarding work of the Comision de Parasitologia with the mite *Pediculoides ventricosus* Newport.

No. 10. ANON., 1904.—Boll weevil in north Texas.<Farm & Ranch, vol. 22, p. 8, April 23.

A plea for the eradication of the weevil when found in isolated colonies in northern Texas. An account is given of the methods used to eradicate the weevil in Sabine and Orleans parishes in Louisiana.

No. 11. ANON., 1904.—Louisiana weevil war.<Farm & Ranch, vol. 23, p. 16, May 7.

Deals with the raising of the Louisiana quarantine on certain Texas products; also with the efforts of the Louisiana and United States authorities to check the eastward spread of the weevil.

No. 12. ANON., 1904.—Enormous boll weevil loss.<Farm & Ranch, vol. 23, p. 8, May 14.

Comment on loss due to boll weevil during 1903.

No. 13. ANON., 1904.—Where the weevil is not.<Farm & Ranch, vol. 23, p. 8, May 21.

Remarks and suggestions regarding the enforcement of quarantine laws against Texas products. Action against sporadic outbreaks of the weevil is urged.

No. 14. ANON., 1904.—Atlanta weevil campaign.<Farm & Ranch, vol. 23, p. 17, May 14.

Contains extract of a speech by Prof. H. A. Morgan (see No. 210) on methods of stamping out isolated colonies of weevils; also an outline of the organization formed and resolutions adopted to protect Cass County, Tex., against invasion by the weevil.

No. 15. ANON., 1904.—Boll weevils spread in north Texas.<Farm & Ranch, vol. 23, p. 8, September 3.

Remarks on the occurrence of the weevil in Collin County, Tex.; also a letter by Mr. W. D. Hunter outlining the work of inspection which has been conducted by the Bureau of Entomology to determine the northern limit of infestation.

No. 16. ANON., 1904.—Perdidas de cosechas. Plan de cultivo. El picudo del algodon. <El Progreso de Mexico, ano 11, p. 714, December 8.

Brief review of some of the work of the Comision de Parasitologia in putting into practice the cultural system of boll weevil control.

No. 17. ANON., 1905.—Boll weevil to stay.<Texas Stockman & Farmer, vol. 24, No. 22, p. 3, April 26.

Remarks on changes in economic conditions due to the boll weevil.

No. 18. ANON., 1906.—Spread of the boll weevil continuing.<Texas Stockman & Farmer, vol. 25, No. 12, p. 3, February 21.

General remarks on the continued eastward spread of the boll weevil.

No. 19. ANON., 1906.—The boll weevil's power.<Farm & Ranch, vol. 25, pp. 8–9, September 29.

A statement of the seriousness of the boll weevil problem and remarks on the economic changes necessitated by its advance.

No. 20. ANON., 1908.—Status of the cotton boll weevil.<Farm & Ranch, vol. 27, No. 28, p. 7, July 11.

A summary of observations made by the Bureau of Entomology in Texas, Oklahoma, Arkansas, Louisiana, and Mississippi, to determine the relative abundance of weevils in different sections of the infested territory.

No. 21. ANON., 1909.—A late cotton season in Louisiana.<Farm & Ranch, vol. 28, No. 22, p. 2, May 29.

Season late in Louisiana and an opportunity is afforded to test the late-planting theory.

No. 22. ANON., 1909.—Boll weevil of two States.<Texas Stockman & Farmer, vol. 28, No. 36, August 25.

Brief statement regarding percentage of infestation in parts of Mississippi and Louisiana and upon the effect of the dry, hot weather.

No. 23. ANON., 1909.—Boll weevil status in Oklahoma.<Monthly Press Bulletin, No. 6, Oklahoma State Board of Agriculture, pp. 2–3, September.

Brief statement of weevil status in Oklahoma and a plea for stalk destruction, by W. D. Hunter, and comment upon fall destruction of stalks in Oklahoma.

No. 24. Ashmead, W. H., 1902.—A new Bruchophagus from Mexico.<Pysche, vol. 9, p. 324, March,

Contains the description of *Bruchophagus herreræ* n. sp., a parasite of *Anthonomus grandis*, from Coahuila, Mexico.

No. 25. Attwater, H. P., 1903.—Boll weevils and birds.<Proc. 2nd Ann. Sess., Texas Cotton Conv., pp. 89–92.

A plea for the protection of birds. The separate includes some newspaper clippings regarding the destruction of boll weevils by birds.

No. 26. B. ——, P., 1906.—El picudo del Algodon.<El Progreso de Mexico, ano 12, pp. 64, 74–75, 88–89, 99–101, 115–117, 131–132, January 30 to March 8.

A brief outline is given of the work carried out by the Comision de Parasitologia during 1905 and the plan of work for 1906. The various methods of control are discussed at length. These include the seed to be used, method of preparing the soil, planting, cultivation, use of trap plants, shaking the weevils from the plants, use of special machines, the breeding and distribution of a native ant, the kelep or Guatemalan ant, use of poisons, planting of special varieties of cotton, various ideas regarding weevil control. New projects to be undertaken by the Commission are mentioned.

No. 27. Bailey, Vernon, 1905.—Birds known to eat the boll weevil.<Bul. 22, Bur. Biol. Surv., U. S. Dept. Agr., 16 pp.

Contains notes on abundance and field habits of several species of birds found in Texas cotton fields. The results of stomach examinations are presented; also remarks on the relation of weevil abundance to the percentage destroyed by birds. The protection of insectivorous birds is urged.

No. 28. Balestrier, L. de, 1897.—Las medias precautorias contra las plagas que asolan a la agricultura.<El Progreso de Mexico, ano 4, pp. 575–576, May 22.

A discussion of the seriousness of the boll weevil situation and necessity for some definite plan of procedure.

No. 29. Balestrier, L. de, 1898.—El picudo en 1897.<El Progreso de Mexico, ano 5, pp. 242–243, January 30.

Brief statement regarding the boll weevil in Tabasco, its parasites, and methods of control. Two machines are briefly discussed.

No. 30. Balestrier, L. de, 1901.—Contra el picudo.<El Progreso de Mexico, ano 8, pp. 481–482, May 22; pp. 497–498, May 30; pp. 531–532, June 15; pp. 545–546, June 22.

Discusses traps, collection of squares, burying of squares, rate of development of weevil, early maturing cotton, occurrence of weevils in cotton seed, destruction of stalks by burning and grazing, spread of the weevil, difficulties in the application of cultural methods and their value emphasized.

No. 31. Balestrier, L. de, 1902.—El picudo. Trabajos de la Comision Mexicana de Parasitologia. Opinion de un entomologista americana.<El Progreso de Mexico, ano 10, pp. 3–4, October 8.

A review and discussion of parts of publications of the Comision de Parasitologia and the U. S. Bureau of Entomology.

No. 32. Barreda, L. de la, 1903.—El picudo en San Pedro de la Colonia.<Boletin de la Comision de Parasitologia Agricola, Mexico, vol. 2, No. 2, pp. 45–58.

Report on investigations of the Commission into the spread of the boll weevil by means of the movement of cotton seed. Methods of treating seed to kill weevils are discussed; also recommendations that the Mexican Government pass laws controlling the importation of cotton seed from the United States.

No. 33. Barreda, L. de la, 1904.—El picudo del algodon.<Cir. 6, Comision de Parasitologia Agricola, Mexico, 35 pp., April 27. Extract: 1904.<El Progreso de Mexico, ano 11, pp. 343–344, and ano 11, pp. 353–354, June 22.

The work upon the boll weevil conducted by the Bureau of Entomology is outlined and a statement made regarding loss due to the pest in portions of Mexico. Portions of an article in the Yearbook, U. S. Dept. Agr. for 1903 (see No. 138) are translated. The work of the Commission is reviewed by giving quotations from some of its previous publications. The work upon the mite *Pediculoides ventricosus* is given the greatest amount of attention.

No. 34. Barreda, L. de la, 1906.—Anotaciones al "Boletin de los agricultores," No. 216, de la Secretaria de Agricultura de los Estados Unidos, pp. 42–48.<Cir. 32, Comision de Parasitologia Agricola, Mexico.

Notes on Farmers' Bul. 216, U. S. Dept. Agr., by W. D. Hunter (see also No. 156).

No. 35. Barreda, L. de la, 1907.—Las plagas del algodonero.<Boletin de la Comision de Parasitologia Agricola, Mexico, vol. 4, No. 2, pp. 107–215, 24 pl., 1 map.

A presentation of the answers to a set of questions sent out by the Commission regarding cotton pests, including the boll weevil. Comments upon the replies. Many references made to natural enemies.

No. 36. Barber, T. C., 1908.—(See No. 229.)

No. 37. Bennett, R. L., 1903.—Evading the boll weevil by new seed varieties and breeding.<Press Notes, No. 2, Texas Agr. Exp. Sta., 1 p., November.

No. 38. Bennett, R. L., 1903.—Cotton culture to escape boll weevil and bollworm.<Press Notes, No. 3, Texas Agr. Exp. Sta., 1 p., November.

No. 39. Bennett, R. L., 1908.—A method of breeding early cotton to escape boll weevil damage.<Farmers' Bul. 314, U. S. Dept. Agr., 30 pp., figs. 1–16, February 7.

Describes practical means of improving cotton seed by plant and seed selection.

No. 40. Bennett, R. L., 1909.—Growing cotton under boll weevil conditions.<Bul. Miss. Agr. and Mech. Coll., Farmers' Institute Dept., vol. 6, No. 1, 13 pp., January.

No. 41. Blair, S. B., 1905.—A lesson from the boll weevil.<Farm & Ranch, vol. 25, p. 3, May 20.

Discussion of economic conditions affected by the advent of the weevil.

No. 42. Boheman, C. H., 1843.—Genera et species Curculionidum cum synonymia hujus familiæ ed. C. J. Schönherr, vol. 5, pt. 2, pp. 232–233.

The original description of *Anthonomus grandis*.

No. 43. Boulin, R. E., 1903.—(See No. 296.)

No. 44. Burkett, C. W., and Poe, C. H., 1906.—Insect enemies of the cotton plant.<Cotton, Chapter 22, pp. 175–181, pls. 2.

Brief popular account of introduction, life history, and remedial measures.

No. 45. Champion, G. C., 1903.—Biologia Centrali-Americana, Coleopt., vol. 4, pt. 4, p. 186, 1 pl., 2 figs., April.

Recorded from Texas; Matamoros, San Andres, Tuxtla, and Vera Cruz, Mexico; and San Jose, Guatemala.

No. 46. Champion, G. C., 1906.—Biologia Centrali-Americana, Coleopt., vol. 4, pt. 4, p. 722, April.

Boll weevil recorded from San Jose, Costa Rica.

No. 47. Commission, State Crop Pest, of La., 1907. The State crop pest law of Louisiana and rules and regulations of the State crop pest commission in effect July 1, 1907.<Cir. 17, State Crop Pest Comm. La., 19 pp., July 1.

No. 48. Connell, J. H., 1902.—Boll weevil convention.<Farm & Ranch, vol. 21, pp. 12–13, 1 map, December 27.

Proceedings of the first Texas boll weevil convention.

No. 49. Connell, J. H., 1903.—Practical legislation against the boll weevil.<Farm & Ranch, vol. 22, pp. 1, 20, January 10.

Comment on the boll weevil situation. The need of applying information already gained and of bringing all facts before the planters in general is discussed. The necessity of further investigation of all injurious pests is emphasized; also the desirability of enacting laws to protect the harmless birds.

No. 50. Connell, J. H., 1903.—Culture of cotton.<Texas Stockman & Farmer, vol. 22, No. 50, p. 6, October 28.

Advantage of early maturing cotton (King's) emphasized.

No. 51. Connell, J. H., 1903.—Proceedings of the Second Annual Session Texas Cotton Growers' Convention, Dallas, Tex., 99 pp., 14 figs.

Contains chairman's remarks, address of welcome and addresses by Honorable James Wilson, Dr. B. T. Galloway, Dr. H. J. Webber (see No. 308), Dr. S. A. Knapp, E. D. Sanderson (see No. 277), C. L. Shear, A. L. Quaintance, H. A. Morgan (see No. 208), Fred B. Jones, W. H. Fairbanks, W. D. Hunter (see No. 141), S. E. Barnes, B. D. Wilson, H. P. Attwater (see No. 25) and Senator Willacy. Reports of committees are given; also short remarks by farmers on practical experiences.

No. 52. Connell, J. H., 1903.—The boll weevil.<Proceedings of the Boll Weevil Conv. called by Gov. W. W. Heard in New Orleans, La. La. Bureau of Agriculture and Immigration, pp. 7–10, 69–73.

General discussion of boll weevil problem as it presents itself in Texas.

No. 53. Connell, J. H., 1904.—Cotton boll weevil as affecting the financial interests of Texas.<Farm & Ranch, vol. 23, p. 16, May 14.

No. 54. Connell, J. H., 1904.—The weevil fight.<Farm & Ranch, vol. 23, p. 21, May 21.

Urges the planters of northern Texas to drive back the weevil by destroying isolated colonies. Remarks on quarantine.

No. 55. Connell, J. H., 1904.—New boll weevil facts.<Farm & Ranch, Cotton Supplement, vol. 23, No. 22, p. 23, May 28.

Comment on poisoning the weevil with Paris green and the effect of winters on the pest in north Texas.

No. 56. Connell, J. H., 1904.—Is there no remedy? Concluding remarks delivered before the Louisiana convention held at Shreveport.<Farm & Ranch, vol. 23, pp. 8–9, 1 map, December 17.

Valuable remarks on the fall destruction of cotton stalks, with suggestions for putting into practice a uniform system of fall destruction.

No. 57. Connell, J. H., 1904.—Effect of the boll weevil on the Texas cotton crop.<Proc., 2d Ann. Meet., La. Boll Weevil Conv., held at Shreveport, La. Cir. 2, La. Crop Pest Comm., pp. 151–154.

No. 58. Conradi, A. F., 1905.—Fall destruction of cotton stalks.<Texas Stockman & Farmer, vol 24, No. 49, p. 3, November 1.

Remarks on fall destruction of cotton stalks and the basis for this recommendation as shown by hibernation experiments at College Station, Tex., and observation on fields defoliated by the cotton-leaf worm.

No. 59. Convention, La. Boll Weevil, 1903.—Proceedings of the Boll Weevil Conv. called by Gov. W. W. Heard, in New Orleans, La.<Louisiana Bureau of Agriculture and Immigration, 91 pp.

Contains addresses by Abe Brittin, Charles Schuler, J. H. Connell (see No. 52), W. D. Hunter (see No. 142), H. A. Morgan (see No. 209), S. A. Knapp, Phanor Brazeale, S. M. Robertson, J. C. Pugh, Walter Guion, J. M. Parker, T. P. Sullivan, B. W. Marston, W. C. Stubbs, F. M. Miller, F. L. Maxwell, W. L. Foster; also letters to the convention, general discussions, and reports of committees.

No. 60. Convention, Louisiana Boll Weevil, 1904.—Proceedings of the Second Annual Meeting, Louisiana Boll Weevil Convention, held at Shreveport, La. <Cir. 2, La. State Crop Pest Comm., 154 pp., 8 pls.

Contains papers dealing with many phases of the boll-weevil problem. Addresses by the following men appear: J. C. Pugh, W. E. Glassell, Charles Schuler, W. D. Hunter (see No. 154), W. L. Foster (see No. 90), August Mayer (see No. 203), Geo. H. Tucker, J. E. Ransdell, Sim Weiss (see No. 310), Geo. F. Neild, B. W. Marston (see No. 201), S. E. Barnes, W. J. Spillman (see No. 291), J. G. Lee, J. H. Connell (see No. 57), N. T. Blackwell, S. A. Knapp, J. A. Skannal, C. C. Hooper. Reports of committees and discussions also appear.

No. 61. Convention, Texas Boll Weevil, 1903.—Kill the boll weevil. How to grow cotton in the boll weevil district. History of the pest, its habits, and the remedies plainly disclosed.<Published by the Executive Committee of the Texas Boll Weevil Convention, 8 pp., 4 figs.

A brief popular account of the weevil and its habits with the principal remedies recommended by the Bureau of Entomology.

No. 62. Convention, Texas Boll Weevil, 1903.—Save the cotton crop. Testimony of cotton growers on boll weevil. How to insure the cotton crop in the weevil district.<Bul. 2, Executive Committee of the Texas Boll Weevil Convention, 16 pp., May. German and Bohemian editions issued.

Brief statement of loss due to pest and a large number of expressions from planters in the weevil district regarding methods of fighting the weevil. Thorough and late cultivation and picking up of squares are principal practices followed during the summer.

No. 63. Convention, Texas Cotton, 1903.—Texas cotton, boll weevil, bollworm, and root rot or "alkali."<Bul. 3, Executive Committee of the Texas Cotton Convention, 20 pp., 1 pl., November.

Contains some statistics regarding cotton production in Texas and in certain weevil infested counties. Considerable space is given to discussions of cotton varieties adapted to boll weevil conditions. Especial emphasis is laid on the earliness of varieties. Land preparation and fertilization for cotton is also briefly treated.

No. 64. Convention, Texas Cotton, 1903.—Improved cotton seed for Texas planting. <Bul. 4, Executive Committee of the Texas Cotton Convention, 19 pp., November 9. Rev. ed., November 17.

Brief statement regarding desirability of securing early maturing varieties. Statement of reduced rates given by Texas railroads on cotton seed from Eastern States. Various sources from which seed may be secured are given.

No. 65. Convention, Texas Cotton, 1904.—Cotton farming. Seed, planting, culture, fertilizing.<Bul. 8, Executive Committee of the Texas Cotton Convention, 7 pp.

Brief statement of cultural methods of control and experiences of cotton growers in the weevil-infested territory.

No. 66. Cook, Mel. T., 1905.—Notes on Cuban insects (Abstract).<Bul. 52, Bur. Ent., U. S. Dept. Agr. Proc. 17th Ann. Meet. Assoc. Econ. Ent., p. 29.

Contains the statement: "The boll weevil is very abundant."

No. 67. Cook, Mel. T., 1906.—Insects of the year in Cuba.<Bul. 60, Bur. Ent., U. S. Dept. Agr. Proc. 18th Ann. Meet. Assoc. Econ. Ent., p. 70.

Mention of damage in Cuba during 1905.

No. 68. Cook, Mel. T., 1906.—Insectos y enfermedades del algodon.<Primer informe anual de la Estacion Central Agronomica de Cuba, pp. 178–180, 1 fig.

Probably introduced into Cuba. Brief description and account of life history.

No. 69. Cook, O. F., 1904.—An enemy of the cotton boll weevil.<Report 78, U. S. Dept. Agr., 7 pp., May 27.

No. 70. Cook, O. F., 1904.—Report on the habits of the kelep, or Guatemalan cotton boll weevil ant.<Bul. 49, Bur. Ent., U. S. Dept. Agr., 15 pp.

An account of the importation of the "kelep" (*Ectatomma tuberculatum* Oliv.) into the United States with notes on the habits of the insect.

No. 71. Cook, O. F., 1904.—Evolution of weevil resistance in cotton.<Science, n. s., vol. 20, pp. 666–670, November 18.

No. 72. Cook, O. F., 1905.—The social organization and breeding habits of the cotton protecting kelep of Guatemala.<Bul. 10, Tech. Ser., Bur. Ent., U. S. Dept. Agr., 55 pp.

A report on observations upon the social organization and breeding habits of the kelep (*Ectatomma tuberculatum* Oliv.) and reference to its importance as an enemy of the boll weevil.

No. 73. Cook, O. F., 1906.—Weevil resisting adaptations of the cotton plant.<Bul. 88, Bur. Plant Ind., U. S. Dept. Agr., 87 pp., 10 pls., January 13.

An exhaustive account of various supposed weevil resisting characters of cotton.

No. 74. Cooper, Elwood, 1908.—Third Biennial Report, Com. Hort. Cal., 1907–1908, pp. 12–13.

Quarantine against seed shipped into State.

No. 75. Crawford, J. C., 1907.—New hymenopterous parasites of *Anthonomus grandis* Boh.<Can. Ent., vol. 39, pp. 133–134, April.

Original description of *Torymus anthonomi*, *Urosigalphus anthonomi*, and *Urosigalphus schwarzi*, all reared from the boll weevil.

No. 76. Crawford, J. C., 1908.—Some new Chalcidoidea.<Proc. Ent. Soc. Wash., vol. 9, pp. 157–160.

Original descriptions of *Cerambycobius cushmani* and *Catolaccus hunteri*, reared from the cotton boll weevil.

No. 77. Dickson, Harriss, 1909.—Br'er [boll weevil. The industrious little party who is eating up the South's credit.<Success Magazine, pp. 503–506, 528, 11 figs., August.

A popular idea dealing with the boll weevil, its habits, spread, means of control, and the economic conditions brought about by the advent of the pest.

No. 78. Dietz, W. G., 1891.—Revision of the genera and species of Anthonomini inhabiting North America.<Trans. Amer. Ent. Soc., vol. 18, p. 205.

The species is here reported from Texas. It has been shown, however, that this was an error. (See No. 119.)

No. 79. Dodson, W. R., 1907.—Boll weevil.<19th Ann. Rept. Agr. Exp. Sta. La. State Univ. and A. & M. College for 1906, pp. 11–12.

Brief statement of progress of work.

No. 80. Dougherty, M. S., 1909.—(See No. 237.)

No. 81. Dougherty, M. S., 1909.—(See No. 238.)

No. 82. Dugeon, G. C., 1907.—Insects and other cotton pests, and the methods suggested for their destruction.<Bul. Imp. Inst., vol. 5, No. 2, pp. 141, 161–163.

Résumé of various writings on the boll weevil. Discussion of amount of damage, life history, habits, enemies, and remedial measures.

No. 83. Earle, F. S., 1906.—Informe del director. El Cultivo del algodon en Cuba. <Primer Informe Anual de la Estacion Central Agronomica de Cuba, pp. 24–29.

A letter from a correspondent pointing out the danger due to the existence of the weevil in Cuba to those who expect to grow cotton. The life history, damage, and means of control are mentioned.

No. 84. Farmer, C., 1901.—Charancon de la capsule.<La Culture du Cottonier, Paris, pp. 333–342, 1 fig.

A concise account of the insect, with remedies. Largely a compilation from publications of the Bureau of Entomology, U. S. Dept. Agr.

No. 85. Ferrer, Eduardo, 1903.—History of cotton and cotton cultivation in Cuba. <Diario de la Marina (Havana, Cuba), March 21–27.

Contains a chapter giving a general account of the weevil.

No. 86. Ferrer, Eduardo, 1903.—Una tentativa de cultivo del algodon en Cuba. <Revista de Agricultura de la Isla de Cuba, pp. 7–17, 1 fig. Reprint: Boletin de Agricultura (Salvador), Tomo III, pp. 513–523.

Contains communications from Dr. L. O. Howard and Mr. E. A. Schwarz regarding the relation of the boll weevil to the cotton industry of Cuba.

No. 87. Flynn, C. W., Jr., 1907.—The boll weevil. Report on the cultural experiments in cooperation with the Bureau of Entomology during 1906.<Cir. 11, State Crop Pest Comm. La., 19 pp., 2 figs., January.

No. 88. Flynn, C. W., Jr., 1907.—Experiments in the late planting of cotton to avoid boll-weevil damage during 1906.<Bul. 92, Agr. Exp. Sta. La. State Univ. and A. & M. College, Baton Rouge, 8 pp., May.

The results of two experiments with late planting of cotton to avoid the boll weevil are presented. In both the weevil caused a loss far greater than would have resulted if early planting had been practiced.

No. 89. Fort, Julian H., 1910.—(See No. 293.)

No. 90. Foster, W. L., 1904.—The boll weevil situation from a Red River planter's standpoint.<Proc. 2nd Ann. Meet. La. Boll Weevil Conv., Shreveport, La. Cir. 2, La. Crop Pest Comm., pp. 22–27.

No. 91. Freeman, Chas. D., & Co., 1909.—The boll weevil. A menace to the world's supply of cotton. New York, 20 pp., 1 map.

No. 92. Freeman, Chas. D., & Co., 1909.—The boll weevil problem. New York, 11 pp., March 3.

Contains figures regarding the decrease in cotton production due to the ravages of the boll weevil.

No. 93. Frierson, L. S., 1906.—(See No. 202.)

No. 94. Froggatt, W. W., 1909.—Report on parasitic and injurious insects in various parts of the world in 1907–1908.<Report of the Government Entomologist, Dept. of Agr. N. S. W., pp. 18–19, 23, 62–63, 4 pls.

Mention of the work on the boll weevil by the U. S. Dept. Agr. and the Crop Pest Commission; also mention of area devoted to cotton in Mexico and presence of boll weevil. Brief history of spread of weevil and of parasites attacking the species.

No. 95. Galloway, B. T., 1905.—Work of the Bureau of Plant Industry in meeting the ravages of the boll weevil and some diseases of cotton.<Ybk. U. S. Dept. Agr. for 1904, pp. 497–508.

No. 96. Galloway, B. T., 1909.—Report of the Chief of the Bureau of Plant Industry. <Ann. Rep. U. S. Dept. Agr., fiscal year ending June 30, 1908, pp. 87–89, 334.

Outline of work of Bureau of Plant Industry.

No. 97. Georgia State Board of Entomology, 1904.—The crop-pest law of Georgia. Reg. Ga. State Board of Ent. <Bul. 10, Ga. State Bd. Ent., p. 9, April.

No. 98. Gundlach, Juan, 1891.—Contribucion á la entomologia Cubana, Tomo III, pt. 5, p. 285.

Mentions occurrence in Cuba.

No. 99. Harned, R. W., 1910.—Boll weevil in Mississippi, 1909.<Bul. 139, Miss. Agr. Exp. Sta., 43 pp., 28 figs., March.

A summary is given of the life history, habits, and means of natural control. Particular emphasis is placed upon the weevil conditions existing in Mississippi. A detailed statement of the spread of the weevil in this State is given. A concise statement of the best methods of artificial control is followed by brief accounts of insects frequently mistaken for the boll weevil.

No. 100. Haskell, C. N., 1908.—Cottonseed-quarantine proclamation.<Proclamation by the governor of Oklahoma, Guthrie, Okla., 3 pp., January 7.

No. 101. Henshaw, H. W., 1907.—Value of swallows as insect destroyers.<Cir. 56, Bur. Biol. Surv., U. S. Dept. Agr., 4 pp., April 27.

Attention is called to the importance of the swallow in the destruction of boll weevils and other injurious insects.

No. 102. Henshaw, H. W., 1907.—Birds useful in the war against the cotton boll weevil.<Cir. 57, Bur. Biol. Surv., U. S. Dept. Agr., 4 pp.

Thirty-eight species of birds found to eat the weevil to greater or less extent. Special mention is made of orioles, nighthawks, swallows, and martins.

No. 103. Herrera, A. L., 1904.—Cuestionario relativo á las plagas de la agricultura. <Boletin de la Comision de Parasitologia Agricola, vol. 2, pp. 278, 279, 280, 303.

Notes regarding occurrence of weevils in certain localities in Mexico and injury due to them.

No. 104. Herrick, G. W., 1904.—The Mexican cotton-boll weevil.<Cir. 17, Miss. Agr. Exp. Sta., 7 pp., 2 figs., February.

Popular account of the life history and habits of the weevil, and danger of importing the pest into Mississippi.

No. 105. Herrick, G. W., 1907.—The boll weevil.<Cir. Miss. Agr. Exp. Sta., 7 pp., 1 fig., September.

Brief and concise statement of the boll weevil situation. Methods of control are discussed. These consist of the fall destruction of cotton stalks and cultural methods. A paragraph is devoted to the relation of birds to the weevil.

No. 106. Hickerson, Chas., 1904.—Boll weevil and irrigation in Mexico.<Farm & Ranch, vol. 23, p. 3, November 26.

No. 107. Hill, Wm., 1910.—The boll weevil.<Unnumbered pamphlet, 8 pp. Alexandria, La.

The writer's views on time of planting cotton to avoid weevil damage.

No. 108. Hinds, W. E., 1904.—(See No. 155.)

No. 109. Hinds, W. E., 1905.—(See No. 160.)

No. 110. Hinds, W. E., 1906.—Proliferation as a factor in the natural control of the Mexican cotton boll weevil.<Bul. 59, Bur. Ent., U. S. Dept. Agr., 45 pp., 6 pls., August 27.

An extensive treatment of proliferation in its relation to the boll weevil. From a large series of examinations it was found that proliferation was responsible for an increase in weevil mortality of 13.5 per cent in squares and 6.5 per cent in bolls. The author concludes that the weevil larvæ are killed mechanically by pressure from the prolifid cells and not from any toxic property of those cells.

No. 111. Hinds, W. E., 1906.—Laboratory methods in the cotton boll weevil investigations.<Bul. 60, Bur. Ent., U. S. Dept. Agr., pp. 111–119, 2 plates, September 22.

Descriptions are given of various devices used by the Bureau of Entomology in conducting investigations on the boll weevil.

No. 112. Hinds, W. E., 1907.—An ant enemy of the cotton boll weevil.<Bul. 63, pt. 3, Bur. Ent., U. S. Dept. Agr., pp. 45–48, 1 fig., February 5.

The ant *Solenopsis geminata* Fab., var. *xyloni* McC., is discussed in its relation to the boll weevil.

No. 113. Hinds, W. E., 1907. The present boll weevil conditions.<Texas Stockman & Farmer, vol. 26, No. 21, p. 4, May 1.

Remarks on the weevil situation in south Texas this spring as compared with other years.

No. 114. Hinds, W. E., 1907.—Some factors in the natural control of the Mexican cotton boll weevil.<Bul. 74, Bur. Ent., U. S. Dept. Agr., 79 pp., 4 pls., 2 figs., December 14.

A very comprehensive report upon the investigation of several natural factors in the control of the boll weevil. The three more important natural agencies in weevil control to which particular attention was given are heat, ants, and parasites. After a preface and introductory paragraph, the following topics are treated: Conditions requiring consideration; influence of short drought in same season; influence of a dry season upon succeeding seasons; control by winter climatic conditions; relationship of factors of control; investigations showing control by heat, ants, and parasites; natural control in various classes of forms; desirability of retention or shedding of infested forms; mortality in bolls versus squares; natural control in various localities; influence of climatic conditions especially; influence of cultural conditions; influence of period of infestation upon natural control; efficiency of natural control in various sections; mortality in each class of forms; sections profiting most by natural control; destruction of cotton forms by weevil attack or by natural causes; summary and conclusions.

No. 115. Hinds, W. E., 1908.—The first and last essential step in combating the boll weevil.<Journ. Econ. Ent., vol. 1, No. 4, pp. 233–243, August.

Contains a brief statement of the economic importance of the boll weevil and a survey of the results of investigational work on control, particularly by the fall destruction of stalks.

No. 116. Hinds, W. E., 1909.—Facing the boll-weevil problem in Alabama.<Bul. 146, Ala. Exp. Sta., pp. 81–102, 2 pls., 1 fig., June.

A history of the spread and damage done by the boll weevil is given. The outlook regarding the infestation of Alabama is discussed.

No. 117. Hinds, W. E., and Yothers, W. W., 1909.—Hibernation of the Mexican cotton boll weevil.<Bul. 77, Bur. Ent., U. S. Dept. Agr., 106 pp., 10 pls., 9 figs., October 18.

A comprehensive treatment of the hibernation of the boll weevil, based upon all of the experiments along this line conducted by the bureau up to the winter of 1907–1908. The following are the principal headings: Entrance into hibernation, shelter during hibernation; hibernation experiments in small cages; large-cage experiments, Keatchie, La., 1905–1906; large-cage experiments, 1906–07, Dallas, Calvert, and Victoria, Texas; emergence from hibernation, 1907; longevity of weevils after emergence from hibernation; sex of weevils surviving hibernation; relation of hibernated weevils to food supply; summary and conclusions.

No. 118. Hood, C. E., 1909.—Types of cages found useful in parasite work.<Journ. Econ. Ent., vol. 2, No. 2, pp. 121–124, April 15.

Description of cages used in breeding boll weevil parasites.

No. 119. Howard, L. O., 1894.—A new cotton insect in Texas.<Insect Life, Div. Ent., U. S. Dept. Agr., vol. 7, p. 273.

The first authentic account of the occurrence of the species in the United States and statements regarding previous reports of occurrence.

No. 120. Howard, L. O., 1895–1899, 1901–1905, 1907–1910.—Reports of the Entomologist.<Ann. Repts. Dept. Agr.

Executive reports in each of which the work of the Bureau of Entomology on the boll weevil is discussed.

No. 121. Howard, L. O., 1895.—The new cotton-boll weevil.<Insect Life, Div. Ent., U. S. Dept. Agr., vol. 7, p. 281, March.

Regarding the importance of the pest and the investigation started by the sending of Mr. C. H. T. Townsend to Texas in December, 1894. Mention is made of the fact that the Assistant Secretary of Agriculture reported the seriousness of the outlook to the governor of Texas, and urged the importance of immediate legislation to provide for quarantining and remedial work.

No. 122. Howard, L. O., 1895.—The Mexican cotton-boll weevil.<Cir. 6 (second series), Div. Ent., U. S. Dept. Agr., 5 pp., 3 figs., April.

This circular gives the results of Mr. Townsend's field observations of the insect in Mexico and Texas. A brief description of the insect is given; also brief notes on distribution, food plants, life history, and habits.

No. 123. Howard, L. O., 1895.—Mistakes about the cotton-boll weevil in Texas <Insect Life, Div. Ent., U. S. Dept. Agr., vol. 7, pp. 362–363, July.

The seriousness of the pest being overlooked on account of the application of the term "sharpshooter" to the boll weevil. Mention of insect breeding in bolls in abundance.

No. 124. Howard, L. O., 1896.—The Mexican cotton-boll weevil.<Cir. 14 (second series), Div. Ent., U. S. Dept. Agr., 8 pp., 5 figs.

Although published as a revision of Circular No. 6, this circular contains a large amount of additional information relative to distribution, natural history and habits, and natural enemies and parasites. Under the head of remedies is the first suggestion of the great importance of the cultural method of control, the importance of fall destruction of the cotton plants, early planting and clean cultivation being especially emphasized. Spring and fall trapping of the adult weevils, destruction of volunteer plants, and, where cheap labor is available, the picking up of infested squares, are recommended. English and Spanish editions.

No. 125. Howard, L. O., 1896.—[The Mexican cotton-boll weevil.]<The cotton plant. Bul. 33, Office Exp. Sta., U. S. Dept. Agr., pp. 335–342, 5 figs.

Practically a reprint of Cir. No. 14, Bureau of Entomology. (See No. 124.)

No. 126. Howard, L. O., 1897.—The Mexican cotton-boll weevil.<Cir. 18 (second series), Div. Ent., U. S. Dept. Agr., 8 pp., 5 figs.

A revision of Circular No. 14 of the Bureau of Entomology with data on distribution brought up to date and the results of recent field investigations relating to habits and remedies incorporated. English, Spanish, and German editions.

No. 127. Howard, L. O., 1897.—The Mexican cotton-boll weevil in 1897.<Cir. 27 (second series), Div. Ent., U. S. Dept. Agr., 7 pp.

Mention of investigations conducted in south Mexico and the unsuccessful attempt to find any weevil parasites there. Statement of extent of injury and spread of the pest during 1897. Mention of possibility of spreading the weevil in seed cotton and cotton seed; also mention of a machine designed to apply dry poisons, and of the value of domestic fowls as weevil destroyers. Remedies as given in Cir. No. 18 of the Bureau of Entomology briefly reiterated.

No. 128. Howard, L. O., 1897.—Insects affecting the cotton plant.<Farmers' Bul. 47, U. S. Dept. Agr., pp. 16–23, 5 figs.

A revised reprint from Bul. No. 33, Office of Exp. Sta., and Cir. No. 14, Bureau of Entomology.

No. 129. Howard, L. O., 1898.—Remedial work against the Mexican cotton-boll weevil.<Cir. 33 (second series), Div. Ent., U. S. Dept. Agr., 6 pp.

A supplementary circular giving the results of some experiments with poisons by Mr. Marlatt and Mr. Townsend. The cultural system of control is again insisted upon as of prime importance.

No. 130. Howard, L. O., 1898.—Some miscellaneous results of the work of the Division of Entomology. Cotton field insects.<Bul. 18, n. s., Div. Ent., U. S. Dept. Agr., pp. 85–88.

Record of insects caught in cotton field during a test of attraction of lights for the boll weevil. No weevils were caught, while 24,492 other specimens were taken.

No. 131. Howard, L. O., 1904.—The Mexican cotton-boll weevil.<Amer. Mo. Rev. of Reviews, vol. 29, No. 169, pp. 188–191, 4 figs.

Popular account of insect, its economic importance, its habits, life history, ravages in Texas, and work of U. S. Dept. of Agr. and State of Texas against it.

No. 132. Howard, L. O., and Burgess, A. F., 1906.—The laws in force against injurious insects and foul brood in the United States.<Bul. 61, Bur. Ent., U. S. Dept. Agr., pp. 9, 34–35, 38–39, 55–60, 79–80, 108–109, 117–119, 128, 134, 139–141, 145, November 5.

No. 133. Howell, A. H., 1906.—Birds that eat the cotton boll weevil. A report of progress.<Bul. 25, Bur. Biol. Surv., U. S. Dept. Agr., 22 pp.

Notes on the abundance of several species of birds occurring in cotton fields and their importance as weevil destroyers as based on numerous stomach examinations.

No. 134. Howell, A. H., 1907.—The relation of birds to the cotton boll weevil.<Bul. 29, Bur. Biol. Surv., U. S. Dept. Agr., 31 pp., 1 pl., 6 figs.

Results of examinations of stomachs of various species of birds, with list of bird species known to eat boll weevils.

No. 135. Howell, A. H., 1908.—Destruction of the cotton boll weevil by birds in winter.<Cir. 64, Bur. Biol. Surv., U. S. Dept. Agr., 5 pp., 1 map, June 19.

The results of observations on the abundance of birds in cotton fields in Louisiana during the winter and the results of stomach examinations to determine the species eating boll weevils and the number of insects destroyed. Thirty species are known to feed more or less upon boll weevils.

No. 136. Hudson, E. H., 1902.—The Mexican boll weevil (*Anthonomus grandis*).<Farm and Ranch, vol. 21, p. 13, 14 figs., February 1.

A brief description and history of the insect, with account of some minor experiments regarding the effect of freezing and the heat of the sun.

No. 137. Hunter, W. D., 1902.—Work of the U. S. Department of Agriculture with the boll weevil.<Proc. 5th Ann. Sess. Tex. Farmers' Cong., pp. 123–124.

A summary of an address before the Farmers' Congress. Early history of weevil spoken of, as also work being conducted by U. S. Dept. Agr. and the damage threatening the cotton industry.

No. 138. Hunter, W. D., 1902, 1904, 1905.—[Status of the Mexican cotton boll weevil in the United States.]<Ybk. U. S. Dept. Agr. for 1901, pp. 369–380, 1 fig.; for 1903, pp. 205–214, 5 pls., 1 map; for 1904, pp. 191–204, 2 pls., 1 fig.

This series of articles includes a history of the weevil, its spread, loss due to it, control methods, and certain special features of the problem.

No. 139. Hunter, W. D., 1902.—The probability of the occurrence of the Mexican cotton boll weevil in Brazil.<Bul. 38, Bur. Ent., U. S. Dept. Agr., pp. 105–106.

Remarks regarding probable occurrence of *Anthonomus grandis* in Brazil.

No. 140. Hunter, W. D., 1902.—[History and distribution of the weevil.] Boll Weevil Convention.<Farm and Ranch, vol. 21, p. 12, 1 map, December 27.

A brief history of the boll weevil, with statement of its distribution at that time. The impossibility of extermination is brought out. (See also No. 48.)

No. 141. Hunter, W. D., 1903.—The status of the Mexican boll weevil in the United States in 1903.<Proc. 2nd Ann. Sess. Tex. Cotton Conv., pp. 71–84, 6 figs.

The general aspects of the problem are discussed, affected territory outlined, and statistics regarding damage presented. The plan of work of the department is discussed and methods of control set forth.

No. 142. Hunter, W. D., 1903.—[The Mexican cotton-boll weevil.]<Proceedings of the boll weevil conv. called by Gov. W. W. Heard in New Orleans, La. La. Bur. Agr. and Imm., pp. 10–12.

Brief history of introduction of pest in the United States and a short account of the experimental work being conducted by the Bureau of Entomology.

No. 143. Hunter, W. D., 1903.—Methods of controlling the boll weevil. (Advice based on the work of 1902.)<Farmers' Bul. 163, U. S. Dept. Agr., 16 pp., 2 figs.

Brief history of the work of the Bureau of Entomology on the boll weevil, affected territory defined, amount of damage, future prospects, and methods of control discussed.

No. 144. Hunter, W. D., 1903.—Work of the U. S. Department of Agriculture with the boll weevil.<Proc. 6th Ann. Sess. Tex. Farmers' Cong., pp. 99–100.

Summary of an address before the Farmers' Congress.

No. 145. Hunter, W. D., 1904.—Information concerning the Mexican cotton boll weevil.<Farmers' Bul. 189, U. S. Dept. Agr., 31 pp., 8 figs. Revision and amplification, 1905. (See No. 156.)

No. 146. Hunter, W. D., 1904.—The use of Paris green in fighting the boll weevil. <Texas Stockman & Farmer, vol. 23, No. 29, pp. 2, 14–15, June 8.

The results of experiments to determine the effect of applying Paris green to volunteer plants as a means of destroying boll weevils.

No. 147. Hunter, W. D., 1904.—Ants and the boll weevil.<Farm & Ranch, vol. 23, p. 16, June 11.

Report on the relation of an ant, *Solenopsis debilis texana*, to the boll weevil in certain cotton fields in Bexar County, and a general statement regarding its usefulness.

No. 148. Hunter, W. D., 1904.—Map showing the distribution of the cotton boll weevil in Texas and Louisiana.<Nos. 19, 24, 25, 29, and 34, Supplement, Texas Section, Climate and Crop Service, Weather Bureau, 1 p., 1 map each, July 19, August 23, August 30, September 27, November 1.

The area generally infested by the boll weevil is defined and the areas in which isolated colonies were found are outlined. The dispersion during the summer is shown by referring to the different maps.

No. 149. Hunter, W. D., 1904.—(See No. 15.)

No. 150. Hunter, W. D., 1904.—Distribution of the cotton boll weevil in Louisiana. <Special Cotton-Boll Weevil Buls. 1 and 2, Louisiana Section, Climate and Crop Service, Weather Bureau, 1 p., 1 map each, September 29 and October 29.

No. 151. Hunter, W. D., 1904.—Controlling the boll weevil in cotton seed and at ginneries.<Farmers' Bul. 209, U. S. Dept. Agr., 31 pp., 1 fig.

The results of extensive studies regarding the relation between the dissemination of the boll weevil and the handling of seed cotton and cotton seed. The following topics are treated: Cotton seed and ginneries as factors in the spread of the boll weevil; control of boll weevils in seed by fumigation; controlling the boll weevil at ginneries; present systems of handling and ginning seed cotton; suggested improvements in devices for handling and ginning cotton; controlling the boll weevil at oil mills; summary of recommendations.

No. 152. Hunter, W. D., 1904.—The most important step in the cultural system of controlling the boll weevil.<Cir. 56, Bur. Ent., U. S. Dept. Agr., 7 pp.

A treatment of the subject of fall destruction of stalks as the most important procedure in boll weevil control.

No. 153. Hunter, W. D., 1904.—The use of Paris green in controlling the boll weevil. <Farmers' Bul. 211, U. S. Dept. Agr., 23 pp.

The results of extensive laboratory and field tests of Paris green against the boll weevil, as well as results of field tests made by cotton planters. The author concludes that the use of Paris green as a means of controlling the boll weevil is futile.

No. 154. Hunter, W. D., 1904.—Recommendations to Louisiana planters based upon investigations in Texas of the U. S. Department of Agriculture, Bureau of Entomology.<Proc. 2nd Ann. Meet., La. Boll Weevil Conv., Shreveport, La. Cir. 2, La. Crop Pest Comm., pp. 14–22, 1 pl.

Discussion of the investigations being conducted by the Bureau of Entomology, with an account of the spread of the pest in the United States.

No. 155. Hunter, W. D., and Hinds, W. E., 1904.—The Mexican cotton-boll weevil. <Bul. 45, Div. Ent., U. S. Dept. Agr., 116 pp., 16 pls., 6 figs. Revision and amplification: 1905, Bul. 51, Bur. Ent., U. S. Dept. Agr. (See No. 160.)

The most comprehensive account of the boll weevil published up to this date.

No. 156. Hunter, W. D., 1905.—The control of the boll weevil, including results of recent investigations.<Farmers' Bul. 216, U. S. Dept. Agr., 32 pp., 5 figs. Spanish translation: 1906, Cir. 32, Com. de Parasit. Agr. Mex., pp. 1–42, by P. L. Moreau.

A bulletin of general information regarding the pest and the best means of controlling it. Contents: Recommendations; introductory; description of the boll weevil; territory affected; damage caused by the boll weevil; a variety test; conclusions regarding the use of fertilizers; relation between stump cotton and weevil damage; experiment in deferred planting; controlling the boll weevil in cotton seed and at ginneries; supposed immunity of Mexican cottons; futile methods suggested for control; quarantines against the boll weevil, including suggestions for a uniform State boll weevil law and present quarantines of the several States.

No. 157. Hunter, W. D., 1905.—Map showing the distribution of the cotton boll weevil in Texas.<No. 31, Supp., Tex. Section, Climate and Crop Service, Weather Bureau, 1 p., 1 map, October 17.

A statement regarding the distribution of the weevil in Texas, with remarks on the conditions which probably caused the reduction in the infested territory in north and northwest Texas.

No. 158. Hunter, W. D., 1905.—The opportunity of the cotton farmers of Texas. <Farm & Ranch, vol. 24, p. 9, November 4.

An argument for fall destruction of stalks. Facts regarding the comparative scarcity of the weevil in 1904 are mentioned.

No. 159. Hunter, W. D., 1905.—[Distribution of the cotton boll weevil in Louisiana.]<Special Cotton Boll Weevil Bul. Nos. 3 and 4, La. Section, Climate and Crop Service, Weather Bureau, 1 p., 1 map each. November 2 and December 19. Reprint: 1905. Farm & Ranch, vol. 24, p. 17, November 25.

Statements regarding the extent of the infested territory in Louisiana and remarks on the dispersion in Louisiana during 1905.

No. 160. Hunter, W. D., and Hinds, W. E., 1905.—A revision and amplification of Bul. 45, to include the most important observations made in 1904. <Bul. 51, Bur. Ent., U. S. Dept. Agr., 181 pp., 23 pls., 8 figs.

The most comprehensive treatise on the boll weevil published. Under general considerations the following topics are discussed at considerable length: History; destructiveness; territory affected; distribution, and prospects. The following are the principal divisions found in the publication: Life history; food habits; insects often mistaken for the boll weevil; possibility of baiting weevils with sweets; reproduction; development; seasonal history; dissemination; natural control; artificial control; and bibliography. All of these topics are discussed at length. Under the heading, Artificial control, the numerous futile methods which have been presented are discussed and the most approved methods of control as indicated by all experiments with the pest are set forth. The bibliography includes the more important contributions to the subject up to the date of issue.

No. 161. Hunter, W. D., 1906.—Statement concerning the present status of the cotton boll weevil in Texas.<Nos. 13 and 21, Supplement, Texas Section, Climate and Crop Service, Weather Bureau, U. S. Dept. Agr., 1 p. each, July 3 and August 28.

Results of a large series of field examinations to determine the abundance of the weevil in different sections.

No. 162. Hunter, W. D., 1906.—Area infested by the cotton boll weevil, October 10, 1906.<Farm and Ranch, vol. 25, p. 16, 1 map, November 24.

A statement of the distribution of the boll weevil in the United States, with remarks on the ability of the pest to adapt itself to various climatic and other conditions.

No. 163. Hunter, W. D., 1907.—The boll weevil.<Texas Stockman & Farmer, vol. 26, No. 17, pp. 1–2, April 3.

A circular letter dated March 27, 1907, setting forth the weevil conditions prevailing at that time.

No. 164. Hunter, W. D., 1907.—Boll weevil prospects for 1907.<Farm & Ranch, vol. 26, p. 7, April 13.

Statement that the winter of 1906–07 was unusually favorable for successful hibernation of the weevil. The necessity for applying the cultural methods is emphasized.

No. 165. Hunter, W. D., 1907.—Some recent studies of the Mexican cotton boll weevil.<Ybk. U. S. Dept. Agr. for 1906, pp. 313–324, 1 pl., 1 map.

The following topics are discussed: The status of the cotton boll weevil in 1906; local variations and their causes; the relation between weevil damage and precipitation; factors in the natural control of the boll weevil; additional data concerning importance of fall destruction of cotton stalks; late planting.

No. 166. Hunter, W. D., Newell, Wilmon, Pierce, W. D., 1907.—The insect enemies of the cotton boll weevil.<Cir. 20, State Crop Pest Comm. La., 7 pp., 3 figs., December.

Brief general account of the parasitic and predaceous insect enemies of the boll weevil, with suggestions for increasing their usefulness.

No. 167. Hunter, W. D., 1907.—The most important step in the control of the boll weevil.<Cir. 95, Bur. Ent., U. S. Dept. Agr., 8 pp., October 3. Revised edition: 1908, September 21, French and English editions.

A revision of Cir. No. 56, Bureau of Entomology (see No. 152), with additional data obtained from recent experiments. Following an introductory statement are presented the results of a large practical test of the efficiency of the fall destruction of cotton stalks. Reasons for the destruction of stalks in the fall are given; also a brief summary of the data obtained from a large series of hibernation experiments upon which these reasons are based.

No. 168. Hunter, W. D., 1908.—Boll weevil scarcer.<Texas Stockman & Farmer, vol. 26, No. 27, p. 7, June 17.

Results of the first boll weevil status examination made by agents of the Bureau of Entomology during 1908.

No. 169. Hunter, W. D., 1908.—The cotton boll weevil in Oklahoma.<1st Biennial Report, Okla. State Bd. Agr., to the Legislature of the State, for the years 1907–1908, Part V, pp. 36–42.

Brief history of the weevil in the United States and summary of its life history and habits. The distribution of the cotton boll weevil in Oklahoma is outlined and a statement made regarding prospects for injury by the pest.

No. 170. Hunter, W. D., 1908.—Urges stalk burning.<Texas Stockman & Farmer, vol. 26, No. 41, p. 3, October 14.

The necessity of early fall destruction of cotton stalks as a means of lessening weevil injury next year is urged and reasons for this operation set forth.

No. 171. Hunter, W. D., 1908.—Getting rid of the boll weevil.<Farm & Ranch, vol. 27, No. 51, p. 3, December 19.

Brief statement regarding boll weevil conditions in Texas. Injury during 1908 less than during preceding years; reasons for scarcity assigned. Principal methods of control outlined.

No. 172. Hunter, W. D., 1908.—Regarding late planting to avoid damage by the boll weevil.<Bul. 120, Miss. Agr. Exp. Sta. Farmers' Institute Bulletin, 1907–1908, pp. 17–24, December.

A review of the history of the late-planting theory as a means of boll weevil control and a collection of data, based mainly on experiments of the Bureau of Entomology, which show the fallacy of this idea.

No. 173. Hunter, W. D., 1909.—Boll weevil situation in Oklahoma.<Monthly Press Bul. 7, Okla. State Bd. Agr., pp. 2–3, September 1.

A statement regarding the scarcity of boll weevils in Oklahoma due to the heat and drought. The early fall destruction of stalks is urged so as to take advantage of the natural setback the weevil has received.

No. 174. Hunter, W. D., 1909.—The boll weevil problem with special reference to means of reducing damage.<Farmers' Bul. 344, U. S. Dept. Agr., 46 pp., 9 figs., January 23.

This bulletin gives the most comprehensive treatment of the various means of boll weevil control yet issued. The introductory paragraph contains a brief account of the investigations of the pest, with a history of the infestation of the cotton region. The prospect for damage in the future and in new regions is discussed, as also the work upon which the bulletin is based. A concise account of the life history and brief description of the insect is given, and a discussion of its hibernation and the several factors of natural control. The subject of dissemination receives concise treatment. Means of control are discussed at length. Under "means of control" are the following subdivisions: Burning infested plants in the fall; methods of destroying weevils in the fall; destruction of weevils in hibernation places; locating fields to avoid damage; crop rotation; procuring an early crop; additional expedients in hastening the crop; special devices for destroying the weevils (under this topic is given a complete description of a chain cultivator, devised by Dr. W. E. Hinds, and remarks regarding its uses); hand picking of weevils; topping of plants; cotton-leaf worm and boll weevil; destroying the weevil in cotton seed; relation of means of controlling the boll weevil to the control of other insects; general control through quarantines; attempts to poison the boll weevil; false remedies; summary; special treatment of small areas.

No. 175. Hunter, W. D., 1909.—What can be done in destroying the cotton boll weevil during the winter.<Cir. 107, Bur. Ent., U. S. Dept. Agr., 4 pp., January 12.

Emphasis is placed on the desirability of following early fall destruction of cotton plants with general clearing up of all places likely to offer hibernating quarters for the weevil.

No. 176. Hunter, W. D., 1909.—The boll weevil situation.<Texas Stockman & Farmer, vol. 28, No. 43, p. 4, October 13.

An address at the Tri-State Fair at Memphis, Tenn. Statistics are given showing the effect of the weevil upon cotton production in Texas. The weevil situation in the Mississippi Delta is discussed and the various obstacles met in the fight against the weevil in that region are pointed out. Remedial practices are mentioned.

No. 177. Hunter, W. D., 1910.—The status of the boll weevil in 1909.<Cir. 122, Bur. Ent., U. S. Dept. Agr., 12 pp., 1 fig.

A concise statement of boll weevil conditions in 1909. An estimate is made of the percentage of the cotton area of each State which was infested at the end of the season in 1909. A discussion is given of the factors which tended to reduce damage during 1909 and of the dispersion during that year. Under "History in Texas" appears a discussion of the cotton production in different sections of Texas. This nicely illustrates the effect the weevil has had on the cotton production of the State. The results of experiments with a chain cultivator designed by Dr. W. E. Hinds are given. The parasites of the weevil are briefly treated and a summary is given of the work by Messrs. Newell and Smith (see No. 239) on the use of powdered arsenate of lead against the weevil. Some of the possible disadvantages of the use of arsenate of lead are set forth.

No. 178. Hutchinson, W. L., 1908.—Cotton culture in Mississippi in areas infested with the Mexican cotton boll weevil.<Bul. 117, Miss. Agr. Exp. Sta., 6 pp., December.

Treats of the cultural remedies for the boll weevil, including soil preparation, fertilization, cultivation, varieties, destroying of favorable hibernating places, etc.

No. 179. Jones, Fred. B., 1903.—A State system of applying present boll weevil and bollworm remedies to each county.<Proc. 2d Sess. Tex. Cotton Conv., pp. 63–65.

A discussion of fall destruction of cotton stalks and fall plowing and the importance of putting these operations into practice generally.

No. 180. Knapp, S. A., 1904.—Diversification of crops in Louisiana.<Proc. 2d Ann. Meet. La. Boll Weevil Conv., held at Shreveport, La. Cir. 2, La. Crop Pest Comm., pp. 123–131.

A discussion of diversification of crops as a means of bettering the agricultural situation. Mentions the need of cooperation among planters in carrying out the cultural system of weevil control.

No. 181. Knapp, S. A., 1905.—Agricultural methods for boll weevil districts.<Unnumbered pamphlet, Bur. Plant Ind., U. S. Dept. Agr., pp. 1–8, February 21.

A general consideration of the agricultural practices desirable in boll weevil infested regions, with particular attention to the cultural system of cotton growing to lessen boll weevil injury.

No. 182. Knapp, S. A., 1908.—Demonstration work in cooperation with southern farmers.<Farmers' Bul. 319, U. S. Dept. Agr., 22 pp., April 6.

A general outline of the methods employed by the Bureau of Plant Industry in conducting farm demonstrations throughout the Southern States, and particularly in the weevil-infested area.

No. 183. Knapp, S. A., 1909.—Field instructions for farmers' cooperative demonstration work.<Unnumbered circular, Bur. Plant Ind., U. S. Dept. Agr., pp. 1–5, March 15.

Outline of the methods of cotton culture recommended by the author. Picking up of infested squares in the early summer and fall destruction of stalks are advised in weevil infested districts.

No. 184. Knapp, S. A., 1910.—Cotton the greatest of cash crops.<Cir. 32, Office of the Secretary, U. S. Dept. Agr., 10 pp., February 26.

An address delivered at Greenville, Miss., Jan. 17, 1910. Opinions regarding the present outlook for cotton production in boll weevil territory.

No. 185. Madero, J. M. C., 1902.—Una plaga del algodon.<Boletin de Agricultura (Salvador), Tomo II, Num. 14, pp. 483–485, July 15.

Comments on failure of means of control as then recommended by the U. S. Department of Agriculture. States that cotton growing has been abandoned on account of the weevil in Coahuila, for corn and wheat.

No. 186. Mally, F. W., 1899.—Appeal to Texas cotton farmers.<Texas Stockman & Farmer, vol. 18, No. 34, p. 4, June 14.

Areas of heavy infestation should be observed and especially dealt with. Picking infested squares weekly from last week in May until July recommended.

No. 187. Mally, F. W., 1899.—Boll weevil and bollworm.<Texas Stockman & Farmer, vol. 18, No. 37, pp. 10–11, July 5.

The author expresses the belief that by the square-picking method the planters have practically won the fight. Value of their destruction even if but few of the early squares are infested is emphasized. Not sufficient to plow the squares under.

No. 188. Mally, F. W., 1899.—The boll-weevil pest and how it may be dealt with and eradicated.<Cotton Ginner's Journal, vol. 3, No. 5, p. 9, September.

Recommends picking up squares.

No. 189. Mally, F. W., 1900.—Protecting the cotton crop from insect pests.<Farm & Ranch, vol. 19, p. 3, August 11.

An address before the cotton growers section of the Farmers' Congress, July 3–6, 1900. Remarks on spraying and spray machines.

No. 190. Mally, F. W., 1900.—To destroy boll weevils.<Farm & Ranch, vol. 29, p. 1.

Comment on the practice of picking up and burning infested squares; advantages again emphasized. Suggests the desirability of perfecting a machine to gather the fallen squares from the ground by suction.

No. 191. Mally, F. W., 1900.—Protecting the cotton crop from insect pests.<Proc. 3rd Ann. Sess. Tex. Farm. Cong., pp. 183–185.

Mentions the use of poison against the weevil; also migration and trapping of weevils.

No. 192. Mally, F. W., 1901.—Cotton-boll weevil. How it works. Fighting it by gathering up infested squares.<Cotton Plant, May 24, vol. 18, No. 21, p. 3.

Advocates picking up and destroying squares.

No. 193. Mally, F. W., 1901.—Arsenate of lead against cotton insects.<Proc. 4th Ann. Sess. Tex. Farm. Cong., p. 103.

Mention of arsenate of lead as a boll weevil spray.

No. 194. Mally, F. W., 1901.—Colonizing the boll weevil.<Farm & Ranch, vol. 20, pp. 3–4, October 26.

Urges close grazing of cotton stalks in fall. When all stalks can not be grazed down, the author recommends mowing all but a few rows which are left as a trap, those rows to be poisoned frequently or grazed down. Plans are given for a homemade stalk cutter.

No. 195. Mally, F. W., 1901.—A preliminary report of the progress of an investigation concerning the life history, habits, injuries, and methods for destroying the Mexican cotton-boll weevil (*Anthonomus grandis*). Authorized by a special act of the twenty-sixth Legislature of Texas, pp. 1–33, supplement, pp. 35–45. State printer, Austin, Tex.

The life history and habits of the weevil are discussed and insects mistaken for the boll weevil mentioned. Remedial measures are discussed at length. These include: The use of early maturing varieties and other cultural remedies; grazing of cotton in the fall; trapping weevils in spring and fall; fall plowing; hand picking of infested squares, and the use of arsenate of lead as a spray. The question of spraying and spray machinery is given a lengthy treatment. The futility of the use of lights for trapping the weevil is pointed out.

No. 196. Mally, F. W., 1901.—The Mexican cotton-boll weevil.<Farmers' Bul. 130, U. S. Dept. Agr., 3 pp., 4 figs.

A reprint, with minor changes, of No. 195.

No. 197. Mally, F. W., 1902.—Report on the boll weevil. State printer, Austin, Tex., 70 pp., 3 figs.

A final report upon the investigations of the author, acting as State entomologist of Texas. Contains much information published previously by the author (see Nos. 195 and 196), with additional data gained by further experiments and observations. The life history and habits and natural enemies of the weevil are discussed. In addition to methods of control in the publications above referred to, wide spacing of the plants is treated; also early planting and the use of early maturing varieties. The control of the weevil in cotton seed is discussed, and data regarding the hand picking of weevils and infested squares are presented.

No. 198. Mally, F. W., 1902.—Ways and means. Boll-weevil convention.<Farm & Ranch, vol. 21, pp. 12–13, December 27.

Synopsis of a speech before the boll weevil convention. The need of legislation, both State and national, was dwelt upon. Means of control were also discussed (see No. 48).

No. 199. Marlatt, C. L., 1902.—Report of the Acting Entomologist.<Ann. Rept. Bur. Ent., U. S. Dept. Agr., for fiscal year ending June 30, 1902, p. 196.

Executive report on work carried on by the Division of Entomology.

No. 200. Marston, B. W., 1904.—Boll weevil diary. [Paris green applications, etc.] <Farm & Ranch, vol. 23, p. 17, April 30; p. 8, May 7; p. 17, May 14; p. 13, May 21; p. 16, May 28; p. 16, June 18; p. 16, June 25; p. 13, July 9; p. 12, October 15; p. 17, October 29; p. 17, November 26.

No. 201. Marston, B. W., 1904.—Experience in poisoning the boll weevil.<Proc. 2nd Ann. Meet. La. Boll Weevil Conv., held at Shreveport, La. Cir. 2, La. Crop Pest Comm., pp. 65–83, 88–96.

A paper relating to the use of Paris green against the weevil by the writer; also letters from planters regarding its use; pages 88–96 contain discussions of Mr. Marston's paper.

No. 202. Marston, B. W., Frierson, L. S., and Newell, Wilmon, 1906.—Report of the executive committee upon the Paris green experiments conducted against the boll weevil during 1905.<Cir. 8, State Crop Pest Comm. La., 31 pp., 4 figs., May.

No. 203. Mayer, August, 1904.—The boll-weevil situation from a Red River planter's standpoint.<Proc. 2nd Ann. Meet. La. Boll Weevil Conv., held at Shreveport, La. Cir. 2, La. Crop Pest Comm., pp. 27–33.

A discussion of the importance of maintaining soil fertility and of the interrelationship existing between the boll weevil problem, the cattle-tick problem, and welfare of the farmer.

No. 204. Mayer, August, 1907.—The most important factor in solving the boll weevil problem.<Cir. 16, State Crop Pest Comm. La., 8 pp., June 20.

Discussion of the relation of the cattle tick to the boll-weevil problem. Particular stress is placed upon the necessity of eradicating the cattle tick, so as to enable the cotton growers of the South to raise cattle profitably, and thus have the manure to increase the productivity of the soil.

No. 205. Morgan, A. C., 1907.—Papers on the cotton boll weevil and related and associated insects. A predatory bug reported as an enemy of the cotton boll weevil.<Bul. 63, pt. 4, Bur. Ent., U. S. Dept. Agr., pp. 49–54, figs. 8–9.

Life history and habits of a bug, *Apiomerus spissipes* Say, reported as an enemy of the boll weevil.

No. 206. Morgan, H. A., 1896.—The Mexican cotton bollworm.<Rept. La. Bd. Agr. for January, February, March, and April, pp. 2–6, 5 figs.

A brief account of the boll weevil and its habits, with the principal remedies suggested prior to this time by the Division of Entomology.

No. 207. Morgan, H. A., 1903.—(See No. 296.)

No. 208. Morgan, H. A., 1903.—To prevent the spread of the Mexican cotton boll weevil into the States.<Proc. 2nd Ann. Sess. Tex. Cotton Conv., pp. 61–63.

A discussion of possible means of preventing the spread of the boll weevil.

No. 209. Morgan, H. A., 1903.—How to protect Louisiana against the invasion of the boll weevil.<Proc. Boll Weevil Conv. called by Gov. W. W. Heard, in New Orleans. La. Bur. of Agr. and Immig., pp. 12–16.

Suggests probable means of preventing or hindering the dissemination of the insect into and throughout the State of Louisiana.

No. 210. Morgan, H. A., 1904.—The Mexican boll weevil.<Farm & Ranch, vol. 23, p. 17, May 14.

An address (in part) made before a farmers' institute in Cass County, Tex. The methods employed to stamp out isolated colonies of the weevil in Louisiana and probable results of such work in Texas are given.

No. 211. Morgan, H. A., 1904.—The Mexican cotton boll weevil.<Cir. 1, Crop Pest Comm. La., 16 pp., 4 figs., June 1.

A pamphlet of general information, including a brief history of the boll weevil and statements from various sources regarding damages due to the pest.

No. 212. Morgan, H. A., 1904.—The Mexican cotton-boll weevil.<Proc. 17th Ann. Sess. State Agr. Soc., and the 6th of the La. Stock Breeders' Assoc., pp. 64–71.

General account of the insect, including life history and habits. The necessity for maintenance of quarantines against cottonseed products and other farm products likely to carry boll weevils is emphasized in connection with remarks on the protection of Louisiana from invasion.

No. 213. Morgan, H. A., 1904.—Checking spread of boll weevil in Louisiana.<Farm & Ranch, vol. 23, pp. 3–4, December 24.

No. 214. Morton, J. Sterling, 1895.—Report of the Secretary of Agriculture.<Ann. Repts. Dept. Agr. for year ending June 30, 1895.

An executive report in which mention is made of the boll weevil and the inauguration of work against it.

No. 215. Newcomb, J. P., 1903.—The boll weevil.<Texas Stockman & Farmer, vol. 22, No. 40, August 19.

Treats of the need of careful studies of the boll weevil and the advantages of crop diversification.

No. 216. Newell, Wilmon, 1904.—The Mexican cotton boll weevil.<Bul. 12, Ga. St. Bd. Ent., 29 pp., 21 figs., September.

General discussion of the importance of the problem and losses due to the pest.

No. 217. Newell, Wilmon, 1905.—An open letter to the hill farmers of Louisiana. Take active measures against the boll weevil now.<Crop pest Comm. La., 1 p., October 18. Reprint: 1905, Farm & Ranch, vol. 24, p. 17, October 28.

A brief statement of the cultural method of control, with particular emphasis on the fall destruction of cotton plants.

No. 218. Newell, Wilmon, 1905.—The remedy for the boll weevil.<Cir. 3, State Crop Pest Comm. La., 20 pp., 5 figs., November. Revised edition: 1906, March, 23 pp., 5 figs.

Discussion of cultural methods. Rules governing the shipment of material likely to disseminate the cotton boll weevil.

No. 219. Newell, Wilmon, 1906.—The work of the State Crop Pest Commission with the boll weevil.<Cir. 5, State Crop Pest Comm. La., 20 pp., 3 figs., January.

A statement of the work being carried on by the Crop Pest Commission. The progress of the weevil into Louisiana territory up to date of publication is reviewed.

No. 220. Newell, Wilmon, 1906.—Boll weevil investigations.<1st Bien. Rept. Secretary State Crop Pest Comm. La. for the years 1904 and 1905, pp. 3–10, and an appendix.

A brief history of the Crop Pest Commission, with an outline of the investigation undertaken by the commission up to the time of publication.

No. 221. Newell, Wilmon, 1906.—(See No. 202.)

No. 222. Newell, Wilmon, 1906.—The boll weevil. Information concerning its life history and habits.<Cir. 9, State Crop Pest Comm. La., 29 pp., 15 figs., July.

A concise account of the boll weevil.

No. 223. Newell, Wilmon, 1907.—Report upon the work of the State Crop Pest Commission.<Cir. 13, State Crop Pest Comm. La., pp. 4–5, April.

Brief report on work arranged in cooperation with the Bureau of Entomology.

No. 224. Newell, Wilmon, 1907.—Fighting the boll weevil by picking up the infested squares.<Cir. 15, State Crop Pest Comm. La., 4 pp., June.

Discussion of the value of picking up and destroying of fallen fruit as an adjunct to cultural methods recommended. Recommends picking up squares until July 25.

No. 225. Newell, Wilmon, 1907.—The State Crop Pest law of Louisiana and rules and regulations of the State Crop Pest Commission in effect July 1, 1907. <Cir. 17, State Crop Pest Comm. La., 19 pp., July.

Contains an introductory statement by Mr. Newell, the act which was passed by the House of Representatives and approved Dec. 15, 1903, and rules and regulations of the State Crop Pest Commission of La. in effect on July 1, 1907.

No. 226. Newell, Wilmon, 1907.—(See No. 166.)

No. 227. Newell, Wilmon, 1908.—The boll weevil.<State Crop Pest Comm. La., 2d Bien. Rept. of the Secretary for the years 1906–1907, pp. 9–16, and an appendix.

Report on the work of the commission during 1906–1907. Brief discussion of spread of weevil and quarantine regulations which were enforced up to February 4, 1908, when the quarantine was repealed *in toto*. The following topics are also discussed: Cultural experiments; autumn spraying experiments; weevil destroying machines and boll weevil "remedies;" boll weevil parasites; the Shreveport laboratory; cooperation with the Bureau of Entomology; experiments with Paris green. Under the last topic is presented the results of several extensive field tests of Paris green against the boll weevil, and summary of the results of a special tour of investigation made by the Commission through a region where Paris green was extensively used. These experiments showed that no increase in crop resulted from the application of Paris green.

No. 228. Newell, Wilmon, 1908.—The early cotton and the boll weevil.<Cir. 22, State Crop Pest Comm. La., 7 pp., May.

Discussion of abundance of weevils emerging from hibernation and the mortality among these individuals. Recommends picking up infested squares until June 15 or 20.

No. 229. Newell, Wilmon, and Barber, T. C., 1908.—Preliminary report upon experiments with powdered arsenate of lead as a boll weevil poison.<Cir. 23, State Crop Pest Comm. La., pp. 9–40, 3 figs., July.

Review of literature appertaining to use of Paris green against the boll weevil. Results of Paris green experiments in Louisiana are presented. These experiments demonstrated again the fallacy of the Paris-green theory. Field and cage experiments with the use of powdered arsenate of lead are described and results recorded.

No. 230. Newell, Wilmon, 1908.—Destroying the boll weevils before they enter hibernation.<Cir. 24, State Crop Pest Comm. La., pp. 41–48, August.

A plea for the destruction of cotton stalks in the fall.

No. 231. Newell, Wilmon, and Paulsen, T. C., 1908.—The possibility of reducing boll weevil damage by autumn spraying of cotton fields to destroy the foliage and squares.<Journ. Econ. Ent., vol. 1, pp. 113–117.

Discussion of experiments with various chemical sprays used in an effort to destroy cotton plants in fall without injuring lint. A 3 per cent solution of iron sulphate was found to accomplish good results.

No. 232. Newell, Wilmon, and Rosenfeld, A. H., 1908.—A brief summary of the more important injurious insects of Louisiana.<Journ. Econ. Ent., vol. 1, p. 151.

Note regarding comparative area of infestation in Louisiana. 15,000 square miles are heavily infested; 14,000 square miles have comparatively slight infestation.

No. 233. Newell, Wilmon, and Treherne, R. C., 1908.—A new predaceous enemy of the boll weevil.<Journ. Econ. Ent., vol. 1, p. 244.

Note of the destruction of adult boll weevils by the carabid beetle *Evarthrus sodalis* LeC., and by another species of Evarthrus.

No. 234. Newell, Wilmon, 1908.—Boll weevil in Louisiana.<Farm & Ranch, vol. 27, No. 42, p. 7, October 17.

Remarks on weevil conditions prevailing in Louisiana. Statement that present conditions point to even more serious injury during 1909 than was experienced in 1908. Urges the destruction of cotton stalks as early as possible in the fall.

No. 235. Newell, Wilmon, and Rosenfeld, A. H., 1909.—Report upon variety and fertilizer experiments with cotton in the boll weevil infested sections of Louisiana.<Cir. 26, State Crop Pest Comm. La., pp. 65–86, February.

A report upon several experiments with different varieties of cotton and with the use of different fertilizers in weevil infested regions of Louisiana; also a discussion of the futility of late planting as a means of avoiding weevil injury.

No. 236. Newell, Wilmon, 1909.—What constitutes a perfect stand of cotton when fighting the boll weevil.<Spec. Boll Weevil Bul. 1, La. State Board Agr. and Immig. (Cir. 25, State Crop Pest Comm. La.), 15 pp.

Presents the results of several experiments to determine the effect on yield of planting cotton with different spacing, in weevil infested territory.

No. 237. Newell, Wilmon, and Dougherty, M. S., 1909.—The "V" cotton stalk cutter. How to make it and how to use it.<Cir. 30, State Crop Pest Comm. La. pp. 151–158, 4 figs., September 15.

Specification for building the "V" cotton stalk cutter and how to operate it.

No. 238. Newell, Wilmon, and Dougherty, M. S., 1909.—The hibernation of the boll weevil in central Louisiana.<Cir. 31, State Crop Pest Comm. La., pp. 163–219, 6 figs., October.

An important contribution to the knowledge of the hibernation of the weevil, based upon a large experiment carried out at Mansura, La., during the winter of 1908–1909. The importance of early fall destruction of the cotton plants is emphasized, based on the results of the experiment. The following are the main divisions of the article: Time of entrance into hibernation; number of adults surviving the winter; emergence from hibernation; length of time weevils live after leaving hibernation; comparison of climatological conditions existing during this experiment with those normally existing in central Louisiana.

No. 239. Newell, Wilmon, and Smith, G. D., 1909.—Experiments with powdered arsenate of lead as a practical boll weevil poison.<Cir. 33, State Crop Pest Comm. La., pp. 251–333, 4 figs.

A detailed report on a number of experiments with powdered arsenate of lead carried out during 1908 and 1909. Nearly all of the experiments show a marked increase in yield in favor of the poisoned areas. The method of application as well as the number of treatments is discussed. Emphasis is placed on the point that the use of this poison is only a supplementary measure to the cultural methods.

No. 240. Norden, A., & Co., 1909.—The boll weevil.<New York, 15 pp., 1 map, February.

A statistical study of boll weevil damage.

No. 241. North, S. N. D., 1904.—Quantity of cotton ginned in the United States (crops of 1899 to 1903, inclusive).<Bul. 10, Bur. Census, U. S. Dept. Comm. and Lab., pp. 9, 15–17, map.

Statement regarding distribution and loss due to the boll weevil, and a brief history of the spread of the weevil in Texas.

No. 242. Olmsted, Victor H., 1910.—Causes of cotton damage in 1909.<Crop Reporter, vol. 12, No. 12, p. 94, December 14.

A loss of 14.9 per cent of the crop of 1909, or 1,267,000 bales, is attributed to the boll weevil.

No. 243. Oppel, A., 1902.—Die Baumwolle. Leipzig, pp. 389–392, 3 figs.

Brief general account.

No. 244. Paulsen, T. C., 1908.—(See No. 231.)

No. 245. Pierce, W. D., 1907.—(See No. 166.)

No. 246. Pierce, W. D., 1907.—On the biologies of the Rhynchophora of North America.<Ann. Rep. Nebr. State Bd. Agr., pp. 269, 295–307, 1 pl.

Brief history of the species and a list of its parasitic enemies. Pages 295 to 309 contain a description and comparison of the pupæ of *Anthonomus grandis* with other species of Anthonomus and a bibliography of Rhynchophora.

No. 247. Pierce, W. D., 1908.—Studies of parasites of the cotton boll weevil.<Bul. 73, Bur. Ent., U. S. Dept. Agr., 63 pp., 3 pls., 6 figs., January 21.

A report upon extensive studies of the parasites of the boll weevil and other weevils. Contents: Introduction. History. The work on parasites in 1906. I. Examination work—Records prior to 1906; breeding records of 1906; most favorable plant conditions for parasitism of the boll weevil, field conditions, geographical considerations, boll-weevil status, boll-weevil chronology, conclusions. II. Propagation work: Transfer or artificial propagation of parasites; field work; release of parasites. III. Parasite breeding work: Occurrence of species; geographical and seasonal distribution of parasites; biological notes on the parasites. IV. The sources of the parasites: Parasites known to attack Rhynchophora; biologies of the weevils contributing parasites; rotation of hosts. V. Conclusions and prospects. Bibliography. Index.

No. 248. Pierce, W. D., 1908.—The economic bearing of recent studies of the parasites of the cotton boll weevil.<Journ. Econ. Ent., vol. 1, pp. 117–122, April.

Summarization of the work of the Bureau of Entomology in an endeavor to increase the efficiency of parasites of the boll weevil in Texas.

No. 249. Pierce, W. D., 1908.—Factors controlling parasitism with special reference to the cotton boll weevil.<Journ. Econ. Ent., vol. 1, pp. 315–323.

Discussion of various factors which affect the abundance and efficiency of parasites in controlling the boll weevil.

No. 250. Pierce, W. D., 1908.—A list of parasites known to attack American Rhynchophora.<Journ. Econ. Ent., vol. 1, pp. 380–396.

Contains a list of all parasites known to attack the boll weevil.

No. 251. Pino y Solis, Patricio, 1898.—El algodon en la Costa Grande (Estado de Guerrero).<El Progreso de Mexico, ano 5, pp. 258–259, February 8.

Expresses a belief that certain substances in the soil tend to protect the cotton from the boll weevil.

No. 252. Poe, C. H., 1906.—(See No. 44.)

No. 253. Quaintance, A. L., 1905.—Some present-day features of applied entomology in America.<Proc. 17th Ann. Meet. Assoc. Econ. Ent. Bul. 52, Bur. Ent., U. S. Dept. Agr., pp. 9, 11, 14–17, 20–21.

Mention of the importance of the boll weevil problem.

No. 254. Rangel, A. F., 1901.—Estudios preliminaries acerca del picudo del algodon (*Insanthonomus grandis* I. C. Cu.).<Boletin de la Comision de Parasitologia Agricola, Mex., vol. 1, No. 3, pp. 93–104, 1 pl., 1 fig.

Contains remarks on previous work, importance of the insect, origin and transportation, biology, character of injury, action of climate on imago, burial of weevils futile. Remedies mentioned include: Proper soil preparation, destruction of stalks, inundation, selection of seed, destruction of fallen squares, insecticides, traps, etc.

No. 255. Rangel, A. F., 1901.—Segundo informe acerca del picudo del algodon (*Insanthonomus grandis* I. C. Cu.).<Boletin de Comision de Parasitologia Agricola, Mex., vol. 1, No. 5, pp. 171–176.

Remarks on hibernation, migration and origin, weevils upon sprout cotton and means of destroying them, collection of adults thought feasible.

No. 256. Rangel, A. F., 1901.—Tercer informe acerca del picudo del algodon.<Boletin de la Comision de Parasitologia Agricola, Mex., vol. 1, No. 6, pp. 197–206.

Remarks on the collection of adult weevils from the plants, with description of an apparatus which was used in several experiments with success. The results of several experiments with the picking up of fallen infested squares are reported. The habit of retaining infested fruit was noted on certain varieties and mentioned as a difficulty in destroying the weevil by picking up fallen squares. The deleterious effect of heat upon the weevil is mentioned and observations upon the effect of sunlight on fallen infested squares presented. Recommends the use of varieties with sparse foliage and the wide spacing of plants; also laying off rows so as to admit the sun as much as possible. The occurrence of the mite *Pediculoides ventricosus* upon the egg and larva of the boll weevil is noted for the first time.

No. 257. Rangel, A. F., 1901.—Cuarto informe acerca del picudo del algodon (*Insanthonomus grandis* I. C. Cu.).<Boletin de la Comision de Parasitologia Agricola, Mex., vol. 1, No. 7, pp. 245–261, 2 pls.

A report on various experiments in weevil control. The report contains remarks on the necessity for growing a variety of cotton which will shed the infested squares, if the picking up of squares is to be of importance as a method of control. Experiments with gases are reported.

No. 258. Rangel, A. F., 1902.—Quinto informe acerca del picudo del algodon.<Boletin de la Comision de Parasitologia Agricola, Mex., vol. 1, No. 8, pp. 302–317.

The publication contains general remarks on migration of the weevil and the need of the general application of remedial measures to lessen this spread. The fall destruction of stalks is discussed at length. Extensive experiments with and observations on the mite *Pediculoides ventricosus* are recorded.

No. 259. Redding, R. J., 1905.—Essential steps in securing an early crop of cotton.<Farmers' Bul. 217, U. S. Dept. Agr., pp. 16.

A brief practical treatise on cotton culture. In the introduction the importance of the boll-weevil problem is emphasized.

No. 260. Riley, C. V., 1885.—Natural history of other species of the genus Anthonomus.<Rept. Comm. Agr. for 1885, p. 279.

Notice of the rearing of the boll weevil at the Department from dwarfed cotton bolls sent from northern Mexico by Dr. Edward Palmer. This is the first published record of the food plant and place of breeding of this species.

No. 261. Rios, J. R., 1895.—Aparicion del "picudo" en la Laguna.<El Progreso de Mexico, August 15, 1895.

The author suggests certain means of preventing the weevil from entering the Laguna district, and methods of control if it should become established.

No. 262. Rios, J. R., 1897.—Aparicion del "picudo" en la Laguna.<El Progreso de Mexico, ano 4, pp. 811–813, September 8.

A statement that the weevil had been found in a portion of the Laguna district at Viesca. A previous article (see No. 261) is reprinted.

No. 263. Rios, J. R., 1898.—A proposito del picudo.<El Progreso de Mexico, ano 5, pp. 593–594, July 15,

Letter commenting on Townsend's method of poisoning weevils (see No. 300).

No. 264. Roper, Daniel C., 1907.—Cotton production in the United States, 1906.<Bul. 76, Bur. Census, U. S. Dept. Comm. and Lab., pp. 7–8.

The production of cotton in the State of Texas and in 30 counties is compared for the years 1899, 1902, and 1906.

No. 265. Roper, Daniel C., 1908.—Cotton production in the United States, 1907.<Bul. 95, Bur. Census, U. S. Dept. Comm. and Lab., p. 11.

General statement regarding the distribution of the weevil and remarks on the possibility of producing good crops despite the weevil where improved methods of farming are practiced.

No. 266. Rosenfeld, A. H., 1908.—(See No. 232.)

No. 267. Rosenfeld, A. H., 1909.—(See No. 235.)

No. 268. Ruis y Sandoval, Alberto, 1884.—El algodon en Mexico.<Published by order of the Secretario de Fomento, Mexico.

A map showing cotton production.

No. 269. Russ, S. E., jr., 1904.—(See No. 310.)

No. 270. Sanderson, E. D., 1898.—The Mexican cotton boll weevil.<Texas Farm & Ranch, vol. 17, No. 47, pp. 3–4, November 19.

General account of origin, spread, and habits of the boll weevil. Recommends spraying volunteer cotton with Paris green and plowing out and burning plants in November.

No. 271. Sanderson, E. D., 1902.—The Mexican cotton boll weevil.<Insects injurious to staple crops, New York, pp. 205–213, 4 figs.

Brief history of pest, account of its life history and habits, and remedies recommended by the Bureau of Entomology and others.

No. 272. Sanderson, E. D., 1902.—[Organized effort to destroy the boll weevil.] Boll Weevil Convention.<Farm & Ranch, vol. 21, p. 13, December 27.

The desirability of forming organizations of the business and agricultural interests to carry into effect the methods of control found to be beneficial (see also No. 48).

No. 273. Sanderson, E. D., 1903.—The boll weevil.<Texas Stockman & Farmer, vol. 22, No. 14, p. 4, February 18.

Believes the burning of cotton stalks in late winter useless. Remarks on soil preparation and mention of various insects mistaken for the boll weevil.

No. 274. Sanderson, E. D., 1903—The Mexican boll weevil.<Cir. 1, Ent. Dept. Tex. Agr. Exp. Sta. Press Notes, vol. 5, No. 3, pp. 1–5, figs. 1–3, February 25.

Brief account of the insect, including life history, description, and methods of control.

No. 275. Sanderson, E. D., 1903—How to combat the Mexican cotton boll weevil in summer and fall.<Cir. 4, Ent. Dept. Tex. Agr. Exp. Sta. Press Notes, vol. 5, No. 1, 4 pp., August 10.

Recommends the use of early varieties, selection of cotton seed, thorough cultivation, hand picking of adult weevils from plants in spring, and hand picking of infested squares. Especial emphasis is laid on the fall destruction of the cotton plants either by grazing or cutting and burning, this operation to be followed by deep fall or early winter plowing.

No. 276. Sanderson, E. D., 1903.—Winter work against the boll weevil.<Press Notes No. 1, Texas Agr. Exp. Sta., 1 p., November.

Remarks on stalk destruction, winter plowing, and the use of seed of improved early maturing varieties of cotton.

No. 277. Sanderson, E. D., 1903.—The Mexican cotton boll weevil, habits and means of combating.<Proc. 2d Ann. Sess. Tex. Cotton Conv., pp. 35–46, 6 figs.

Mention of insects mistaken for the boll weevil. A summary of the life history and habits of the boll weevil. Mention is made of natural enemies of the weevil and methods of control are discussed at length. The two methods of control mentioned are (1) grow early cotton and thus avoid the injury, (2) destroy the hibernating brood of weevils and their progeny. Varieties of cotton which seem desirable for planting are discussed, as also fertilization, cultivation, and fall destruction of stalks.

No. 278. Sanderson, E. D., 1904.—The fall campaign against the boll weevil.<Farm & Ranch, vol. 23, pp. 16–17, 1 fig., October 8.

Remarks on the relative number of weevils passing hibernation successfully and its relation to cotton production. A summary is given of experiments with Paris green conducted by the author. Experiments conducted by others are discussed and the author concludes that poisoning is not effective. The desirability of securing legislation to compel fall destruction of stalks is emphasized, as also the need of a State pest commission.

No. 279. Sanderson, E. D., 1904.—The cotton boll weevil in Texas<Proc. 25th Ann. Meet. Soc. Prom. Agr. Sci., pp. 157–170, 6 figs.

Contains a review of the work done on this insect and a statement of the methods of control recommended and the changes made in these recommendations as the investigations proceeded. Attention is called to the fact that spraying has been generally abandoned as a remedy and that hand picking is meeting with little favor.

No. 280. Sanderson, E. D., 1905.—The boll weevil and cotton crop of Texas.<Dept. Agr., Ins., Stat. and Hist., Austin, Tex., 28 pp. 7 figs.

A statistical study of the Texas cotton acreage and cotton crop for the years 1899–1904, inclusive, showing the decrease in production owing to the boll weevil. The writer also reviews estimates of boll weevil damage by various authorities.

No. 281. Sanderson, E. D., 1905.—Some observations on the cotton boll weevil.<Bul. 52, Bur. Ent., U. S. Dept. Agr. pp. 29–42, 1 fig.

This article treats of hibernation of the weevil, including observations on time of entrance into hibernation, emergence from hibernation, and mortality during hibernation. The relation of climatic conditions to hibernation is discussed at some length. The rate of increase of weevils in the fields during the summer is discussed. A general discussion of the futile use of Paris green as a remedy is presented. Emphasis is given to the necessity of fall destruction of the cotton stalks in order to combat the pest.

No. 282. Sanderson, E. D., 1906.—National control of introduced insect pests.<Bul. 60, Bur. Ent., U. S. Dept. Agr., p. 99, September 22.

The loss due to the boll weevil is given as illustrating the advantage which would be gained by having national control of insect pests.

No. 283. Sanderson, E. D., 1907.—Hibernation and development of the cotton boll weevil.<Bul. 63, Pt. I, Bur. Ent., U. S. Dept. Agr., 38 pp., 6 figs., January 15.

This publication deals with the hibernation and development of summer broods of the weevil based on cage experiments and field observations. The relation of temperature and other weather conditions to the hibernation of the insect is given especial attention.

No. 284. Sanderson, E. D., 1908.—The influence of minimum temperatures in limiting the northern distribution of insects.<Journ. Econ. Ent., vol. 1, p. 261, August.

Note regarding the apparent killing out of the weevil in certain sections by low winter temperatures.

No. 285. Schuler, Chas., 1908.—Boll weevil situation.<Spec. Bul. La. State Bd. Agr. and Immig., pp. 2–6.

Good practical advice to the planters of Louisiana regarding the economic situation produced by the weevil and means of meeting it.

No. 286. Schwarz, E. A., 1904.—The cotton boll weevil in Cuba.<Proc. Ent. Soc. Wash., vol. 6, pp. 13–17, January 15.

Report upon investigations regarding the abundance of this species, its food plants, and parasites in Cuba.

No. 287. Shepperson, A. B., 1895.—The Mexican cotton boll weevil.<Cotton Facts, pp. 77–79, 2 figs., December. Reprints and Revisions: 1896–1908, pp. 77–79.

Brief history and very short account of the life history, habits, and remedies. The recent numbers contain a map showing the territory infested.

No. 288. Sherman, Franklin, Jr., 1905.—The cotton boll weevil.<Ent. Cir. 14, N. C. Dept. Agr., 11 pp., 5 figs., January 20.

A bulletin of general information including summaries of life history, habits, and remedies. Discussions of the probable time when the weevils will reach North Carolina, where it will probably first invade the State, and how the State will be affected by its presence are presented.

No. 289. Sherman, Franklin, Jr., 1908.—Erroneous reports of cotton boll weevil—its present status.<Ent. Cir. 21, N. C. Dept. Agr., 4 pp., March.

No. 290. Smith, G. D., 1909.—(See No. 239.)

No. 291. Spillman, W. J., 1904.—Diversification of crops in Louisiana.<Proc. 2d Ann. Meet. La. Boll Weevil Conv., Shreveport, La. Cir. 2, La. Crop Pest Comm., pp. 99–107.

Brief general treatment of the work of the U. S. Dept. of Agriculture against the boll weevil and a more lengthy discussion of that portion of the work relating to diversification.

No. 292. Stewart, Wm. M., & Roper, Daniel C., 1910.—The boll weevil cotton production, 1909.<Bul. 107, Bur. Census Dept. Comm. and Lab., pp. 9–10.

Brief statement regarding damage done by the boll weevil and the dispersion of the pest.

No. 293. Stone, Alfred H., and Fort, Julian H., 1910.—The truth about the boll weevil. Published by the First National Bank of Greenville, Miss. 36 pp.

A report on agricultural conditions existing in certain boll weevil infested districts in Texas, Louisiana, and Mississippi visited by the writers.

No. 294. Stringfellow, H. C., 1908.—The boll weevil situation in Texas.<Crop Rept. La. State Bd. Agr. and Immig., pp. 7–34, October.

A report upon conditions relating to cotton production in weevil-infested regions of Texas. This report deals with information secured directly from cotton planters during a tour of investigation made by the author as a representative of the farmers of Ouachita Parish, La. Much valuable information is brought together upon the various cultural practices in vogue and general economic conditions.

No. 295. Stringfellow, H. M., 1909.—On late planting.<Farm & Ranch, vol. 28, No. 17, pp. 18–19, April 24.

Ideas upon late planting of cotton as a means of boll weevil control. (See also No. 172.)

No. 296. Stubbs, Wm. C., Boulin, R. E., Morgan, H. A., 1903.—The Mexican cotton boll weevil.<Cir. 1, La. Agr. Exp. Sta., 10 pp., 3 figs., 1 map.

Summary of life history and habits. Suggestions to aid in preventing the spread of the boll weevil in La., as also a discussion of the appearance and extermination of weevils on the station farm at Audubon Park, New Orleans, La.

No. 297. Stubenrauch, J. W., 1904.—Cotton insects and Texas farmers.<Rural New Yorker, vol. 63, No. 2842, p. 539, July 16.

Comment on discouragement of farmers and depreciation of land values on account of the boll weevil.

No. 298. Suffrian, E., 1871.—Verzeichniss der von Dr. Gundlach auf der Insel Cuba gesammelten Rüsselkäfer.<Archiv. f. Naturg, 37, Jahrg. 13, pt. 1, pp. 130–131.

Contains the record of a specimen from Cardenas and one from San Cristobal, in Cuba.

No. 299. Titus, E. S. G., 1902.—Mexican cotton boll weevil.<Practical farming and gardening, Chicago, p. 454.

Very brief account of insect and remedies.

No. 300. Townsend, C. H. T., 1895.—Report on the Mexican cotton boll weevil in Texas.<Insect Life, Div. Ent., U. S. Dept. Agr., vol. 7, pp. 295–309, 2 figs., March.

The life history and habits are discussed and the question of its introduction and spread in the United States is treated. A large number of remedial measures are suggested. The need of quarantine measures and desirability of prohibiting cotton growing on the border are discussed.

No. 301. Townsend, C. H. T., 1898.—Un remedio contra "el picudo."<El Progreso de Mexico, ano 5, pp. 571–572, June 30.

Letter giving formula for a liquid arsenical to be applied to the cotton. Mentions results of tests made at Cuero, Tex

No. 302. Townsend, C. H. T., 1898.—El picudo.<El Progreso de Mexico, ano 6, pp. 82–84, November 15, and pp. 97–99, November 22.

Remarks at meeting in Cuero, Tex., on Oct. 11, 1898. The history and habits of the weevil and following methods of control are given: Use of sweetened arsenicals, destruction and poisoning of sprout cotton, employment of machines for collecting weevils, picking up squares, destroying plants as early as possible in the fall, and preparing the fields in the winter for the next crop.

No. 303. Travis, P. C., 1904.—Effect of the boll weevil.<Farm & Ranch, Cotton Supplement, vol. 23, No. 22, p. 23, May 28.

Comparative production of cotton in infested and uninfested counties in Texas.

No. 304. Treherne, R. C., 1908.—(See No. 233.)

No. 305. d'Utra, G., 1901.—Cultura do algodoeiro. Contra o "furão" ou caruncho das macãs e carocos do algodão.<Boletin da Agr., Secy. Agr., Com. e Obras. Publas do estado de São Paulo (Brazil), 2nd Ser. No. 4, pp. 211–229.

A discussion of the importance of the boll weevil and remarks on various remedies, based largely on Prof Townsend's early work (see No. 301).

No. 306. Valle, Alfredo del, 1904.—Enemigos vegetales y animales del algodonero.<El Progreso de Mexico, ano 11, pp. 503–504, August 30, pp. 515–516, September 8.

The stages of the weevil are described and life history and habits outlined. Natural enemies are mentioned and the distribution of the weevil in Mexico is given. Various remedies suggested by investigators are presented.

No. 307. Webber, H. J., 1903.—Improvement of cotton by seed selection.<Ybk. U. S. Dept. Agr. for 1902, pp. 384–385.

Remarks on the relative extent of injury by the boll weevil to several varieties of Egyptian cotton.

No. 308. Webber, H. J., 1903.—Breeding cotton resistant to boll weevil.<Proc. 2nd Ann. Sess. Tex. Cotton Conv., pp. 27–31.

Advice regarding the improvement of cotton seed and suggestion that varieties which are somewhat resistant to the boll weevil may be bred.

No. 309. Webster, F. M., 1903.—Mexican cotton boll weevil.<Prairie Farmer, vol. 75, No. 46, pp. 6, 11, 7 figs., November 12.

History of invasion, habits, damage; opportunity for extermination on first appearance in Texas lost. Work of the U. S. Department of Agriculture.

No. 310. Weiss, Sim, and Russ, S. E., jr., 1904.—Report on probable effect of boll weevil in Louisiana and Mississippi.<Proc. 2nd Ann. Meet. La. Boll Weevil Conv., Shreveport, La. Cir. 2, La. Crop Pest Comm., pp. 51–56.

Report on an investigation of conditions existing in the boll weevil infested territory of Texas. Practices recommended by the Department of Agriculture, and known as the "cultural system."

No. 311. Wentworth, W. H., 1906.—Boll weevil facts.<Texas Stockman & Farmer, vol. 25, No. 32, p. 7, July 11.

The fallacy of the opinion that the boll weevil is leaving certain sections is pointed out and the scarcity of weevils accounted for by weather conditions and the presence of the cotton-leaf worm the previous fall. (Taken from San Antonio Express.)

No. 312. Wheeler, W. M., 1904.—On the pupation of ants and the feasibility of establishing the Guatemalan kelep or cotton weevil ant in the United States. Science, n. s., vol. 20, pp. 437–440, September 30.

Discussion of some of the habits of the kelep and reasons why the author believes that this species can not be established in the United States successfully.

No. 313. Wheeler, W. M., 1904.—Some further comments on the Guatemalan boll weevil ant.<Science, n. s., vol. 20, pp. 766–768, December 2.

A further discussion of the improbability of successfully establishing the kelep in the United States.

No. 314. Wilcox, E. M., 1904.—The Mexican cotton boll weevil.<Bul. 129, Ala. Agr. Exp. Sta., pp. 91–104, 4 figs., August.

A brief review of the introduction and present distribution of the weevil, its life history, habits, natural enemies, and means of control.

No. 315. Willey, Day Allen., 1908.—The big bug in cotton.<Van Nordens Mag., vol. 3, No. 6, pp. 88–96, 13 figs.

Popular account.

No. 316. Wilson, James, 1897, 1898, 1899, 1901–1905, 1907–1910.—Report of the Secretary of Agriculture.<Ann. Repts. Dept. Agr.

Executive reports in which the work of the Department relating to the boll weevil is briefly presented. All of these reports are reprinted in the Yearbooks which were issued on the year following their publication in the Annual Reports.

No. 317. Yothers, W. W., 1909.—(See No. 117.)

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